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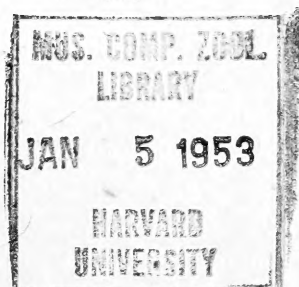
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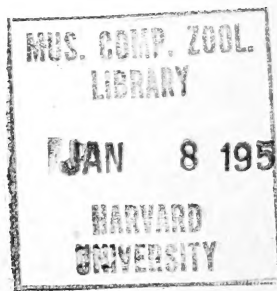
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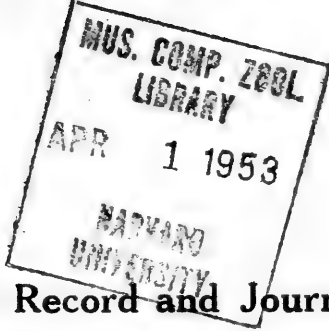
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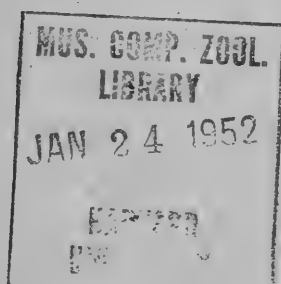
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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

—
EDITED BY

E. A. COCKAYNE
M.A., D.M., F.R.C.P., F.R.E.S.



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The Genetics of *Arctia villica* Linnaeus ab. *wardi* Mathew

By E. A. COCKAYNE, D.M., F.R.C.P.

This beautiful aberration with a large apical cream coloured patch on the forewing was named and figured by Gervase F. Mathew in the *Entomologist*, 1914, **47**, 113, fig. 2. So far as I am aware it is confined to an area on the Essex coast near Dovercourt. Mathew writing from Dovercourt says "the first example of this striking form was taken here more than 20 years ago. It was discovered by Colonel A. J. H. Ward, D.L., V.D., sitting on a bush in his garden. . . . It seems to be a very uncommon variety, for I have not bred many out of the hundreds of larvae I have reared year after year." He says later that he bred none out of 200 larvae reared last season.

The aberration varies slightly. The black mark in the cream coloured patch at the apex of the forewing may form a complete short stripe running at right angles to the costa, or may be broken into two spots, which in the most extreme examples are very small, the anterior one being separated from the costa. There may be a narrow cream coloured stripe along the inner margin at the level of the inner row of cream spots and another, shorter and narrower, at the level of the outer row near the tornus. Either of these may be present without the other. The pattern of the hindwing is characteristic. In *wardi* there is a short black stripe near the apex running from the costa, but there is never a trace of black on the margin of the wing however large the ordinary black spots may be, whereas even in the most lightly marked examples of other aberrations there are always one or two black dots or a few black scales on the margin, though superficially the resemblance of the apical markings to those of *wardi* may be close. Occasionally the apex and the apical part of the fringe of the hindwing may be deep pink of the same colour as the tip of the abdomen.

Wardi may be found in combination with other aberrations. In the Rothschild-Cockayne-Kettlewell collection there is a female combined with ab. *nigrella* Fettig (*brunnescens* Schultz), in which the hindwings are brown instead of orange. There is also a male combined with ab. *strandii* Schultz, in which the central cream spot (spot 3) of the forewing is missing. *Wardi* may be combined with ab. *contracta* Schultz (*fasciata* Spuler), a form almost confined to the female, in which a black stripe runs across the middle of the hindwing.

Dr. Kettlewell was very anxious to obtain ab. *wardi* for his breeding experiments and in an optimistic mood went to Dovercourt in 1945 for larvae. He had a look round and picked out what he thought was the most likely place, but found it covered with barbed wire, and was told

that the mine-field had not been cleared. He discovered that there was a safe path through it and succeeded in finding 50 larvae near the path. He was lucky for he bred one male *wardi* and paired it with three females. (1) a female from Dovercourt = brood 4/45. (2) a female from Cranleigh = brood 5/45. (3) a female from Dovercourt = brood 6/45.

Brood 6/45 was infertile. He handed over the eggs of brood 4/45 to me and in 1946 I bred 20 *wardi*, 8 ♂♂, 12 ♀♀, and 19 normal *villica*, 7 ♂♂, 12 ♀♀. One female *wardi* was a good example of *ab. contracta* Schultz, with a black stripe across the middle of the hindwing, in two others the stripe was broken in the middle, and in three the stripe was still more incomplete. In the 3 *villica* also the stripe was incomplete. Counting all these as *contracta*, and omitting males because it is almost confined to the female, the ratio was 10 *contracta* (7 *wardi*, 3 *villica*): 11 not *contracta* (5 *wardi*, 6 *villica*). Unfortunately Dr. Kettlewell did not keep the female parent of the brood and there is no record of the pattern of its hindwing. Broods have been bred, in which several *contracta* appeared, but the genetics are still unknown. My moths emerged early in the year, when the weather was cold and no pairing could be obtained.

EXPLANATION OF PLATE I.

The Genetics of *Arctia villica* *ab. wardi* Mathew.

- Fig. 1. *ab. wardi* ♂.
- Fig. 2. *ab. wardi* ♀.
- Fig. 3. *ab. wardi* ♂.
- Fig. 4. *ab. wardi* ♂ extreme form with two cream marks on inner margin.
- Fig. 5. *ab. wardi* combined with *ab. strandi* Schultz. ♂.
- Fig. 6. *ab. wardi* combined with *ab. contracta* Schultz. ♀.

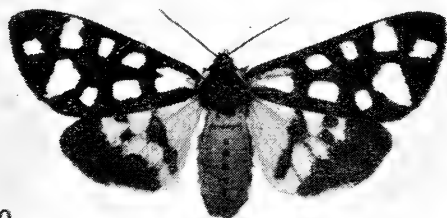
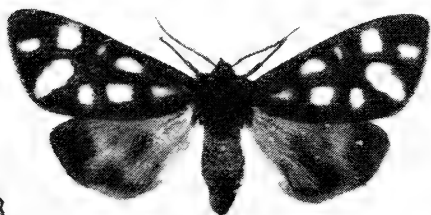
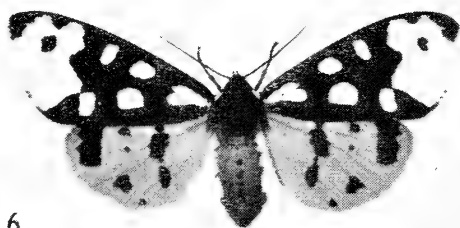
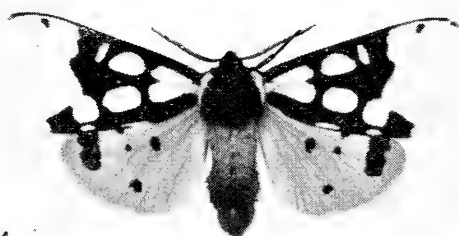
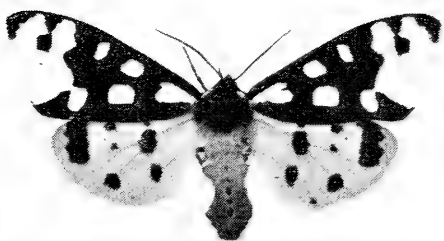
Aberrations of *Arctia villica* Linnaeus.

- Fig. 7. *ab. posticosuffusa* ♂. Type.
- Fig. 8. *ab. infumata* ♂. Type.
- Fig. 9. *ab. nigrociliata* ♂. Type.
- Fig. 10. *ab. nigrolimbata* ♀. Allotype.
- Fig. 11. *ab. mediodeteleta* ♂. Type.
- Fig. 12. *ab. anomala* ♂. Type.

Dr. Kettlewell kept brood 5/45, male *wardi* × normal female *villica* from Cranleigh. All the offspring were normal. Two pairings *inter se* were taken, but all the larvae died of virus disease.

In 1946 Dr. Kettlewell went to Dovercourt again and found 148 full grown larvae, from which he bred 3 *wardi*. He obtained a pairing *wardi* ♂ × *wardi* ♀, the offspring of which were all *wardi*. In 1947 he obtained two pairings of *wardi* ♂ × *wardi* ♀, and again the offspring were all *wardi*. All three broods were very small but at least 16 *wardi* were bred.

In 1947 he also paired a *wardi* ♂ with *ab. ursula* Schultz ♀ of Cranleigh origin. This form has the cream coloured spots on the basal half of the forewing united to form streaks. It appears to be incompletely dominant in the heterozygous state and, though it appears in a considerable number of males, it very rarely appears in a female. The offspring of this brood must all have been heterozygous for *wardi*, but exact records were not kept and it is uncertain how many were *ursula*. Two pairings *inter se* were taken, and one male parent was *ursula* with an apical streak, but it is uncertain whether the other was *ursula* or not.



He hoped by this cross to obtain the combination of *wardi* with *ursula*, which does not appear to have been taken wild or bred in captivity. These broods were both unhealthy and were handed over to me in the autumn of 1948 before Dr. Kettlewell went to South Africa. A considerable number of both broods hibernated successfully, but all the members of one brood died before the last change of skin or soon after. The members of the other brood, which was thought to be the better one, changed skin and fed very well at first, but when nearly full grown the majority stopped feeding and remaining motionless gradually dwindled in size and died. Only six pupated and these produced 1 *wardi* ♂ and 5 normal *villica*, 2 ♂♂, 3 ♀♀ in 1949. None was *ursula*. The *wardi* emerged last and was kept for some days in the hope that there were some cocoons amongst the dead leaves and that a female would emerge.

The results prove that *wardi* is recessive to normal *villica* and is determined by a single autosomal gene. The heterozygote is indistinguishable from homozygous normal *villica*. A summary of the results is given below.

- (1) *wardi* ♂ × normal *villica* ♀ from Cranleigh gave all normal *villica*.
- (2) *villica* (heterozygous) × *villica* (heterozygous) gave 1 *wardi* ♂ : 5 normal *villica*, which in so small a brood is not far from the expected ratio of 1:3.
- (3) *wardi* ♂ × *villica* ♀ (presumably heterozygous) from Dovercourt gave 20 *wardi* : 19 normal *villica*, which is as close as possible to the expected ratio of 1:1.
- (4) *wardi* × *wardi* (three small broods) gave *wardi* of both sexes and no normal *villica*.

Aberrations of *Arctia villica* Linnaeus (Lep. Arctiidae)

By E. A. COCKAYNE, D.M., F.R.C.P.

[The following British aberrations of *Arctia villica* Linnaeus are in the Rothschild-Cockayne-Kettlewell collection in the British Museum.]

Arctia villica Linnaeus ab. **aurantior** ab. nov.

The spots on the forewing are brownish orange instead of cream colour; the hindwing is normal.

Type ♀ : Lancing, Sussex, 1916, J. G. S. Bramall. Rothschild coll.

Paratype ♀ : loc. incog. (Harper coll.) Oberthur coll.

Arctia villica Linnaeus ab. **posticosuffusa** ab. nov. (Fig. 7).

The black markings of the hindwing have a suffused appearance—their edges are blurred instead of being sharp. The forewing is normal.

Type ♂ : Cranleigh, Surrey, bred vi.1944 by H. B. D. Kettlewell.

Paratype ♂ : Cranleigh, bred 2.vi.1944 by H. B. D. Kettlewell.

Arctia villica Linnaeus ab. **infumata** ab. nov. (Fig. 8).

The whole insect is suffused with smoky blackish brown. On the forewing the cream spots are indistinct in outline and dusky; the ground colour of the hindwing is smoky brown with no trace of orange and the black markings are large and indistinct. The cream mark on the thorax is blackish brown and the abdomen is entirely blackish brown.

Type ♂: loc. incog. T. W. Johnson's collection, 1927. R. Adkin coll. This aberration is quite different from ab. **nigrella** Fettig ab. *brunnescens* Schultz, which has a normal forewing and a brownish hindwing showing the orange colour at the base and inner margin.

Arctia villica Linnaeus ab. **flavoabdominalis** ab. nov.

The whole of the abdomen is orange yellow with no trace of the usual deep pink of the distal half.

Type ♀: Gosport, 1895, J. H. Larcom. (Massey coll.) Cockayne coll.

Arctia villica Linnaeus ab. **nigrociliata** ab. nov. (Fig. 9).

The hindwing has a narrow black border and the fringe is black; the forewing is normal.

Type ♂: Penarth, 1906. R. Adkin coll.

Paratypes 3 ♂: 1, Folkestone, v.1898, S. G. Hills. Rothschild coll. 1, I. of Wight, bred 1919 by J. Salvage. Rothschild coll. 1, loc. incog. Rothschild coll.

Arctia villica Linnaeus ab. **nigrolimbata** ab. nov. (Fig. 10).

There is a broad black band along the margin of the hindwing reaching or almost reaching the anal angle. In the type the fringe is black and in the allotype it is black along the outer half of the wing. The forewing is normal.

Type ♂: ? Durham, 2.vii.1891. Rothschild coll.

Allotype ♀: Willesden, London N.W., 1889. (Boot coll.) Cockayne coll.

A female from Breslau is figured by Oberthur (*Lép. Comp.*, 1912, 6, Pl. 109, Fig. 991).

Arctia villica Linnaeus ab. **mediodeleta** ab. nov. (Fig. 11).

The median area of the forewing is black; four spots are missing but they are replaced by blackish grey and not by black as intense as that of the ground; there remain only a small cream basal mark and three cream spots in the outer part of the wing.

Type ♂: loc. incog. (F. Bond, S. Webb, Cosmo Melvill coll.) Cockayne coll.

Arctia villica Linnaeus ab. **anomala** ab. nov. (Fig. 12).

The forewing is rather broader and less pointed than usual; the pair of spots at the base are united and form a cream coloured mark broader and longer than normal and a pointed cream mark joined to the anterior part of the basal mark runs outwards close to the costa; the discoidal cream spot is missing, but the spot distal to the discocellular nervure has a pointed extension near the costa which almost reaches the pointed spot attached to the basal spot; there is only one spot near the inner margin instead of two; there are two spots joined together near the termen. This arrangement of spots gives the forewing a most unusual appearance. The hindwing has a black mark near the apex, a black spot near the margin, two black dots in the middle of the wing at the discocellular nervure and a very small dot on the margin representing the wedge shaped mark which is often joined to the apical mark.

Type ♂: loc. incog. (Baron Bouck coll.) Cockayne coll.

A New Form of *Selenia bilunaria* Esper

By E. S. A. BAYNES.

In July 1947, in my garden at Glenageary, on the south side of Dublin, I caught a worn female *S. bilunaria* var. *juliaria* which deposited ten eggs. Seven moths of the spring brood were bred in 1948, four males of a red maroon colour and three females of more or less normal appearance. A pairing was obtained but the mortality among the larvae was high. A few moths of the 1948 summer brood were bred and two pairings were obtained between moths of this brood and normal var. *juliaria* from Surrey, the larvae of which had been kindly supplied by Dr. H. B. Williams. Eggs resulting from a pairing of Surrey ♂ × Dublin ♀ were sent to Dr. Williams while I retained eggs from a pairing of Dublin ♂ × Surrey ♀. In the spring of 1949, and subsequently, both Dr. Williams and I bred maroon-coloured males together with females of an olive buff colour. I propose to call this form ab. *ebanaria*.

In the summer broods the aberration is distinguishable from normal *juliaria* but the difference is not so clearly marked. None of the males bred so far has the deep maroon colour of most of those of the spring brood, and the females also are closer to the normal form. The following description, therefore, relates entirely to the spring brood:

Selenia bilunaria ab. **ebanaria** (ab. nov.).

Male. Upperside of wings varies from pinkish brown to deep maroon red. Usual markings obscured, to the extent, in some specimens, of making the insect appear almost unicolorous. In most examples there is a band of lighter scales along the costa. Undersides much darker and more obscurely marked than in normal *bilunaria*.

Female. Upperside of wings brownish buff through varying shades of obscure olive buff. Extreme examples have a dark almost leaden appearance. Some are almost unicolorous. Undersides considerably duller than in normal *bilunaria*.

Male holotype. Bred March 1951 by E. S. A. Baynes. British Museum collection, Tring.

Female allotype. Bred March 1951 by E. S. A. Baynes. British Museum collection, Tring.

Male paratypes. No. 1. Bred March 1951. British Museum collection, Tring.

No. 2. Bred 7th March 1949. British Museum collection, Tring.

No. 3. Bred March 1948 from wild Dublin female. British Museum collection, Tring.

No. 4, 5. Bred March 1951. British Museum collection, Tring.

No. 6. Bred March 1951. National Museum collection, Dublin.

Nos. 7, 8. Bred March 1948 from wild Dublin female. Collection E. S. A. Baynes.

Nos. 9, 10. Bred March 1951. Collection E. S. A. Baynes.

- Female paratypes. Nos. 11, 12. Bred March 1951. British Museum collection, Tring.
- No. 13. Bred March 1950. British Museum collection, Tring.
- Nos. 14, 15. Bred March 1951. British Museum collection, Tring.
- No. 16. Bred March 1951. National Museum collection, Dublin.
- No. 17, 18, 19, 20. Bred March 1951. Collection E. S. A. Baynes.

The Genetics of *Selenia bilunaria* ab. *eblanaria* Baynes

By E. A. COCKAYNE, D.M., F.R.C.P.

Mr. E. S. A. Baynes bred four males of a maroon red colour, heterozygotes of the aberration he has named *eblanaria*, and three normal females from eggs laid by a worn female taken near Dublin in July 1947. A normal male from Holmbury St. Mary, Surrey, was paired with one of these normal females and produced normal moths, brood 62/48, but no pairings of these were taken. All the other broods given in the table originated from brood 61/48 from a dark male evidently heterozygous from the *eblanaria* gene and a normal Holmbury female. The Holmbury stock came from a female taken in the spring of 1947 by Dr. Kettlewell.

In the summer brood the heterozygote is sometimes difficult or even impossible to distinguish from normal *bilunaria* especially in the female sex and in the table some moths may have been wrongly allocated. On the other hand in the spring brood normal males with unusually dark ground colour on both surfaces appeared in some broods and were not always easy to distinguish from heterozygotes. Their smooth appearance and a tendency for the white scales along the costa to diminish or disappear often made the heterozygotes recognisable. Brood 67/49 is the only complete brood I have seen of which both parents were heterozygotes. In this brood the expectation is a 1:2:1 ratio, homozygous *eblanaria* : heterozygotes : normal *bilunaria*. Two females are definitely darker and more uniform in colour than the other ten and are almost certainly homozygotes. The males of this brood vary a little in depth of colour, but I cannot separate them into two distinct classes.

Recently Mr. Baynes has obtained pairings between two heterozygotes, darker than those bred earlier, and some, if not all, their dark offspring must be homozygous. Those of the spring brood which I have seen are considerably darker than the spring homozygotes of brood 67/49 and have a more melanic appearance with less of the maroon hue than those of earlier generations.

The dark form is determined by a single gene, which is neither recessive nor dominant. The heterozygotes of the second brood may be indistinguishable or scarcely distinguishable from homozygous normal *bilunaria* whereas those of the first brood may be nearly as dark as homozygous *eblanaria*. By selecting the darkest specimens as parents still darker heterozygotes and homozygotes with a melanic appearance

have been obtained, showing that in a certain gene complex the gene is more clearly expressed.

Ab. eblanaria must be distinguished from *ab. brunnearia* Mansbridge (*Ent. Record*, 1911, **23**, 228), which is uniform dark ferruginous brown. In the *Lepidopterous Fauna of Lancashire and Cheshire* by J. W. Ellis, revised by W. Mansbridge, it is stated that *ab. brunnearia* appeared in the fourth generation bred from a wild female taken in Delamere Forest. If so it must be recessive and cannot be the same as *ab. eblanaria*.

Brood number.	Normal parents.	Heterozygous for <i>eblanaria</i> .	Doubtful.	Normal.
62/48 F2	Holmbury ♂ × Dublin ♀			14 : 5♂, 9♀
6/49 F3	Dublin origin ♂ × Holmbury ♀			all normal
7/49 F3	" "			48 : 28♂, 2♀
47/49 F3	" "			7 : 1♂, 6♀
	heterozygote ♂ Dublin × normal ♀ Holmbury	heterozygous for <i>eblanaria</i>	doubtful	normal
61/48 F2		31 : 13♂, 7♀		35 : 7♂, 15♀
2/49 F3		13 : 11♂, 2♀	1♀	20 : 9♂, 11♀
3/49		4 : 1♂, 2♀	5 : 4♂, 1♀	10 : 4♂, 6♀
4/49		15 : 9♂, 6♀		10 : 6♂, 4♀
8/49		1 : 1♂	2 : 2♂	3 : 2♂, 1♀
74/49 F4		6 : 2♂, 4♀		9 : 2♂, 7♀
6/50 ex 74/49 F5		1 : 1♂		2 : 2♂
	heterozygote × heterozygote	heterozygous and homozygous for <i>eblanaria</i>		normal
67/49 ex 2/49 F4		21 : 9♂, 12♀		5 : 2♂, 3♀
8/50 F5		3 : 2♂, 1♀	1♀	1 : 1♀
39/50 ex 7/50		10 : 10♂		4 : 4♂

FOOTNOTE It will be noticed that, though the total number of heterozygotes should be equal to the total number of normal *bilunaria* in the broods of which one parent was heterozygous and the other normal, the table shows a deficiency of heterozygotes. This is due to the fact that about a dozen heterozygotes were given away and no note of the exact number and sex was kept. Had these been included the numbers would have been approximately equal. Where the number of males and females added together is smaller than the total number, the sex of the others was not noted.

The Scarcity of Insects in Southern Latium (Central Italy) in 1951

By LYCAENA ROMEI, M.D., Nat.Sc.D.

My grandfather, Orazio Querci, tells me that when he went occasionally to Formia in 1904 he found there such an abundant and interesting insect fauna that he returned there to collect, together with his wife and daughter, several times in the following year. I collected at Formia in 1938 and again in 1947, on each occasion taking thousands of insects of many kinds. Afterwards insects became scarce and we found it more profitable to go and collect on the Apennines; but even there, in the same localities where in the past insects have been plentiful, we reaped but a poor harvest.

During 1951 I collected at Formia, together with my grandfather and grandmother, with a view to enquiring into the causes of insect scarcity. We lived in a country house, so that we could go out and collect at any time when the weather was not too bad. Winter was rainy, spring was stormy, but it was never cold. On rare occasions light snow fell on the high mountains behind the town, but it disappeared rapidly. The outlook seemed to be better than in previous years, for the earth remained damp until the beginning of July. In spite of the favourable conditions, however, we often sat on the rocks in brilliant sunshine and in marvellous surroundings without seeing anything on the wing other than a few honey-bees and ants.

In April a few common species of Papilionidae and Satyridae were flying; in May also an occasional *Melanargia arge*, *Gegenes pumilio*, *Zygaena rubicundus* and *Z. transalpina* emerged. These species were formerly abundant and it was easy to take them as they fed on the flowers; but now, in spite of the immense quantity of wild flowers all about one the insects did not stop to feed. They seemed to be restless and flew erratically. It was difficult to catch them.

In June a large number of *Pararge ida*, *P. megera* and *Vanessa cardui* emerged. *Pieris napi*, *P. manii* and *P. ergane* were very rare; *Pontia daplidice* was the most abundant Pierid. We obtained many eggs from two female *daplidice*: they were orange and very small. The emergent larvae were put into a glass tube with plenty of fresh food-plant; we noticed, however, that the number of larvae decreased every day until only two remained. That night we saw that the bigger larva was eating the smaller one. The survivor pupated and the butterfly emerged 24 days after the egg was laid.

In July we found many males of *Satyrus statilinus* congregated in the shade of carob trees. In previous years this species has always emerged in August. Males of *Melitaea didyma* also were plentiful. A few worn females of *S. statilinus* and *didyma* were seen later, together with a few specimens of *Zygaena carniolica* and *Z. punctum*. By the end of July only tattered females of *statilinus* and *ida* were on the wing.

We made several trips to the hills round about the town, seeing no insects other than ants and honey-bees. However, we caught some butterflies on the wild flowers growing along the short road which leads

from our house down to the seashore. My grandmother kept a constant eye open for butterflies, and whenever she saw any from our windows she went out with a net. She was anxious to take *Uharaxes jasius* and *Lycaena thersamon* again—they had put in an appearance in our garden in 1947; but this time they failed to arrive.

By the 28th July insects of all kinds seemed to have disappeared save house flies and ants. Even cicadas and crickets were not heard. My grandmother, who has collected since she was a girl, insisted, in spite of her old age, on climbing up to a woody and damp spot on the Aurunci Mountains where she often went almost half a century ago. This time I went with her. When we arrived there all we saw were four very worn Satyrids. Unfortunately, the climb proved to be too much for my grandmother and it was just as well that I accompanied her. I was glad to get her safely home.

At Formia the summer drought usually continues until October; but in 1951 it rained in September, though afterwards the weather was fine. Only a few *P. rapae* and *Polyommatus icarus* were seen. The only moths that came to light at night were some *Plusia gamma* and *Peridroma saucia*, together with many specimens of a big green hemipteron which stank abominably; so instead of the interesting moths that we used to get almost every night in past years we were afflicted by a pest! The large emergence of butterflies that used to occur regularly in October did not materialize. At least forty species of butterflies and moths occurring at Formia did not appear at all. Other Orders of insects were more poorly represented still.

As I have already said, the weather was better than in most other seasons. Ants certainly found it favourable and may have exercised some controlling influence over the Lepidoptera in the early stages; but this is a condition which occurs more or less everywhere in all years. Besides, butterflies were more common round about our home, an area which is full of Argentine ants, than on the slopes of the mountains where that species is absent. This last year there were many *Apanteles glomeratus* both in late winter and early spring; later we saw only two Ichneumonids whereas in 1947 we took about 200 of them. Neither moisture at a low temperature nor drought with intense heat could have destroyed developing insects to such an extent. Neither fires nor floods occurred.

For the last twenty years I have been helping my grandfather in his entomological work and we have published a good many papers. But in spite of what we have learned during our collecting visits to many countries, extensive breeding of larvae, and laboratory experiments we are unable to offer any hypothesis for the causes of a scarcity of insects which was apparent, and strikingly apparent, not only in Italy but in countries where D.D.T. spraying is still unknown. We have read with great interest what has been printed in this magazine about the scarcity of Lepidoptera in England and in Europe in 1951. We hope that other Continental entomologists will relate the conditions which prevailed in their own collecting grounds, since it is only by collating reports from many different observers and places that we can hope to solve this problem.

Rome, 31st October 1951.

Observations on *Thalera fimbrialis* Scopoli in Kent in 1951, with some notes on its early stages

By J. M. CHALMERS-HUNT, F.R.E.S.

Though once before, in 1945, in France at Epinoy (Pas de Calais) I noted an imago at rest which I believe to have been this species, it was not until 1951 that I first had the pleasure of seeing it alive in Britain. In the locality in Kent where I found it I discovered that its distribution extends over several miles; but only in one place did I see it in any numbers. Here it has apparently colonised an area of about thirty yards square. The moths normally fly at dusk, and later on at night they sit about on the stems of a large coarse grass. I have also taken them at light.

I visited its headquarters in the autumn in an endeavour to discover if possible the young larva and thence perhaps to ascertain its natural food in this country; but in this I was unsuccessful. However, this was hardly surprising when one considers, amongst other things, how small and insignificant the larva is at this time.

A female imago taken in August was put into a glass-bottomed box. She was rather worn and laid only 31 eggs. Most of these were on the muslin covering, a few on the cardboard side, and quite a number on the glass itself. Evidently she had deposited her total complement, for a post mortem examination of her abdomen revealed no further eggs.

The egg when laid is of an apple-green colour. It has a smooth surface and in shape is ovoid, rather deeply depressed above, and is normally deposited upright. Length approximately 1 mm. I noticed that the eggs were delicately scented with a sweet perfume and in this respect they reminded me somewhat of the eggs of *Hemistola immaculata* Thunb. When kept at normal room temperature the egg changes to a brownish colour on the 12th day after being laid. The egg stage lasts just a fortnight, and the larva becomes visible through the shell about twelve hours before eclosion. It is interesting to note that after the change of colour I was no longer able to detect any scent.

The newly hatched larva is ochreous-yellow and measures 1.5 mm. when fully extended. They were supplied with leaves of *Achillea millefolium* and upon these seemed to thrive, growing rapidly for the first week of their existence. In habits they are rather lethargic and appear to have no disposition to wander from the foodplant. I noticed that when touched the larva immediately contracts itself into the form of an ionic volute, in the manner so characteristic of certain other Geometrid larvae.

When about three weeks old many of the larvae died from a disease that I was unable to check or to diagnose. They simply fell off the foodplant and remained in a static and moribund condition for a period of two or three days. In view of these symptoms it seems possible that a virus may have been the cause of the trouble.

By the end of September only five larvae remained alive. There were less signs of movement and feeding as the weather became colder, and by the middle of October they appeared to have entered into a state of hibernation, resting on the foodplant in a semi-comatose con-

dition. At this stage the larva is approximately 5 mm. long when extended, of a dull greenish-brown colour, with two prominences situated close to the head.

When examined on 23rd November they were all found to be dead.

A Search for Larvae of *Eupithecia actaeata* Walderdorff and *Eupithecia immundata* Zeller

By E. A. COCKAYNE, D.M., F.R.C.P.

During his last visit to England Dr. Skat Hoffmeyer asked whether *Actaea spicata* grew in this country, and on being told that it was found in the North of England and was called the baneberry he said he thought that one or both the species of *Eupithecia* peculiar to it might occur here. These are *E. actaeata*, a large species, which has a green larvae with red markings on the dorsum and eats holes in the leaves towards the end of August and in September, and *E. immundata*, a very small species allied to *E. haworthiata*, which has a maggot-like larva feeding on the interior of the ripe berries. The berries are round and black and the larva betrays its presence by making a small hole. *Actaea spicata* grows freely in many parts of Denmark and the pugs are found wherever it occurs. The distribution of both species made it likely that they would be found here, for *actaeata* is found as far north as the latitude of Scotland and *immundata* extends into Iceland. They might easily have been overlooked by entomologists, and if botanists saw the larvae they would be unlikely to know that they were peculiar to *Actaea*.

I thought the matter well worth investigation and it needed little effort on my part to persuade those enterprising entomologists, E. W. Classey and H. S. Robinson, to undertake a careful search. The expedition was well organized. Dr. Hoffmeyer sent a pressed plant of *Actaea* with leaves full of holes eaten by *actaeata*. The figures of both larvae in Dietze's monograph were examined and information about the distribution of the plant was obtained. They went to Ingleborough on 5th September and stayed in Yorkshire until 10th September and the weather was fine. A local botanist, Mr. Cheetham of Auswick, who knows where all the *Actaea* in a fifty mile radius grows, acted as their guide, and they visited the two best localities and three subsidiary ones. The following account is derived from their letters.

The main locality, Coult Park, is incredibly rough and dangerous country. The plants grow singly and each plant is, on an average, separated from the next by a distance of at least fifty yards. They are small and it would be a rare plant that had more than a dozen leaves. The berries were just fully ripe and there was usually at least one spray on each plant. The largest plant had three sprays. The leaves and berries showed no signs of having been eaten by anything save in one instance where a leaf lying on moss had been nibbled by a slug. Every plant in the area was carefully examined without success. The second main locality, Raisgill in Wharfedale, is a very large area and about three-quarters of it was prospected. The plants are here again separated by very large distances. They are smaller than at Coult Park and the berries and leaves were quite intact. Three secondary localities

were visited; in the first six plants were found, in the second two, and in the third only one.

Both Classey and Robinson feel confident that, if the insects ever occurred in this country, they do so no longer.

Notes on Microlepidoptera found in Cheshire in 1951

By H. N. MICHAELIS.

The year 1951 has, on the whole, been disappointing and only a few species new to the county records have been taken. In addition, some useful confirmations of existing records have been received.

Scoparia pallida Steph. There are two records of this insect taken about thirty years ago, previous records are prior to 1890. A visit to the mosses at Wilmslow on 14.vii.1951 between 1930-2030 hrs. (B.S.T.) produced one specimen, disturbed from cotton grass. Half an hour after sunset on 17.vii.1951, *Scoparia pallida* was flying in numbers in the area where hard work had produced only two specimens earlier in the evening. The moths were flying over the open and wet parts of the moss. Few were taken among the small birches, which surrounded this area, where *Scoparia ambigua* Treits., was flying in abundance.

Gelechia similis Staint. This moth, first recorded for Cheshire in 1949, was disturbed in plenty during the early evening from long grass growing around birch bushes on a moss at Wilmslow on 14.vii.1951. A short flight was seen in the sunshine about 2100 hrs. (B.S.T.), the moths retiring to rest on the grass stems as the sun set.

Gelechia politella Staint. This species has not been recorded from Cheshire since 1916. A Gelechid in moderate condition was taken on 22.vi.1947, on the moors above Lyme Park, Disley, and Mr. Wm. Mansbridge suggested it was this species. On the afternoon of 1.vii.1951 a single specimen was found near Kettleshulme (1,200 ft.) and a dozen were taken at dusk on 7.vii.1951 in the Goyt Valley (1,100 ft.). In contrast to the published habitat, "in dry places", I found my specimens, in each case, on a moorland which was sufficiently damp to support *Juncus communis* and *Juncus squarrosus*. My thanks are due to Mr. J. D. Bradley of the British Museum who has confirmed the identification.

Phthorimaea maculea Haw. Last recorded by the late C. S. Gregson from the Wirral, Mr. B. B. Snell has bred this species from *Stellaria holostea* from the same area in 1950/51.

Oegoconia quadripuncta Haw. Meyrick gives the range of this species as "S. England to Gloucester, Suffolk, Derby", and I can find no record for Cheshire. A single specimen was found on a post at Delamere on 11.viii.1951.

Mompha subbistrigella Haw. Not previously recorded for Cheshire, a specimen was taken by Mr. R. Prichard at Bebington, Wirral on 5.vi.1951.

Elachista perplexella Staint. Although I can find no records, I feel this species may have been taken by some of the Cheshire collectors of the nineteenth century. In May for the last three years the larvae were found in plenty near Castle Mill, mining the tips of the leaves of *Aira caespitosa*. In 1951 the moth was common at Burton, Wirral. I am

again indebted to Mr. Bradley for the identification of this and the two previously mentioned species.

Elachista scirpi Staint. Not recorded for Cheshire, this moth was common on 14.vii.1951 flying among *Scirpus maritimus* between 1930/2130 hrs. (B.S.T.), on the Dee salt marshes. None was disturbed during the afternoon.

Coleophora limosipennella Dup. Not recorded for Cheshire. A whitish-yellow blotch, at the most $\frac{1}{4}$ inch in diameter, showed the presence of the larvae in their long brown cases on the underside of birch leaves at Wilmslow in October 1950/51. The larvae, sleeved on birch, ceased feeding before the end of October and passed the winter attached to a branch or twig. In late April the larger larvae wandered about the sleeve and birch twigs but no signs of feeding on the young leaves could be found. Towards the middle of May, the larvae attached themselves to twigs for pupation and on 10th June, a larval case was opened and a pupa was found therein. I have noticed a similar habit of larvae, active in early spring, pupating without food when breeding *Coleophora paripennella* Zell., *C. orbitella* Zell., and *C. virgaureae* Staint. The larva of *C. limosipennella* Dup., needs almost two years to complete its growth and the smaller larvae found in October 1950 recommenced feeding in the spring of 1951.

Coleophora artemisiella Scott. Not recorded for Cheshire. A single case was found on a post on the Burton (Wirral) salt marsh in mid-May 1951. The larva made no effort to feed but wandered about the tube in which it was enclosed, at the end of May it finally settled down to pupate. The moth emerged on 10.vii.1951.

Coleophora olivacella Staint. Not recorded for Cheshire. The larva was found feeding on *Stellaria holostea* by Mr. B. B. Snell on the Wirral during 1950/51.

Bucculatrix cidarella Zell. First recorded for Cheshire by Mr. H. L. Burrows at Cotterill Clough in 1949. A second specimen was taken in June 1951 by Mr. R. Prichard at Bebington, Wirral. A cocoon found at the base of an alder at Wilmslow in October 1951 may prove to be this species.

Ochsenheimeria vacculella F.R. Rarely taken in the county, we have two recent records: at Lymm in the 1940's by Mr. S. Charlson and one by Major A. W. Boyd at Frandley near Great Budworth on 6.viii.1951.

Holiday Diversion

By A. M. R. HERON, M.B., Ch.B.

A few years ago an octogenarian entomologist rekindled the interest of my youth in his hobby. In so doing he rejuvenated himself to such an extent that he was soon able to dash about in bogs with one of my nets. Since then I have devoted some of my spare time to the fascinating study of Lepidoptera—a fine relaxation from long surgeries, and from form filling.

This summer we planned to go to Northern Ireland, and later to the South West of Eire. My friend, Dr. Neville L. Birkett, on hearing of this, urged me to try to find *Luceria virens*, which should be flying about the time of my journey South.

We left " the Mountains of Mourne sweeping down to the sea " on Monday, spent Tuesday night among the beautiful blue mountains of Connemara, and on Wednesday afternoon, 16th August, visited the Burren of Clare to do a reconnaissance for an evening expedition. This promontory has to be seen to be believed. Connemara is said to contain as many stones as the rest of the world, but I do not think the Burren was included. The best fields are about 75% slabs of limestone, of a type I have not seen anywhere else. It looks like large slabs of toffee cut with a knife, and in between grow stunted shrubs, grass, bracken, heather and rock plants. The odd cow or donkey wanders about among these trying to find a morsel to eat. How the inhabitants scrape a living is incomprehensible.

We toured this forbidding but interesting peninsula on the chance of finding a likely spot for *Luceria virens*, but nowhere looked hopeful. We next looked for a place where we could run the car on to the grass without ramming our sump. Having found this, with difficulty, we marked a track with stones to help us after dark.

My small son and I did a bit of goat work springing from rock to rock in the vain chance of finding a Claddagh moth, but without success. The sun was shining, at least fitfully, the best one could expect this last summer, and among the numerous *Polyommatus icarus* we saw, one obligingly spread its wings for a second while resting. To my great surprise it was half blue and half brown (a bilateral gynandromorph). I called my son to my help and before long we had successfully netted it—a perfect specimen. It was interesting to find when setting it that the body would not stay straight, but assumed an S bend, but I suppose this is only to be expected under the circumstances. I find that the one represented in E. B. Ford's book shows the same abnormality. We saw little else of interest in the afternoon, although Peacocks and a fine light type of Grayling were numerous.

We went on to Gort for the most wonderful dinner I have tasted for years. Feeling well fortified by this we retraced the dusty road to the Burren. The beautiful sunset on the way was such that we felt the journey would have been worth while even if no green moths had appeared.

About twilight we arrived at our chosen spot, and I painted numerous rocks and patches of heather with very tempting treacle mixture well laced with rum.

While I was arranging sheets in front of my car and selecting boxes, dusk came quickly, and I saw a green moth flying rapidly into the gloom. I thought it might be the looked-for prize, but I was disappointed as it had disappeared before I could reach my net. I switched on my headlights and lit a pressure lamp, but little came for a time. I felt that this was only to be expected in such a barren windswept spot. This probably was not near the place where the Classey expedition had been successful a year before—nobody whom we saw could, or would, tell us.

A few male *Cerapteryx graminis* and *Lygris testata* began to appear and not far behind were *Aspitates gilvaria*, some of which were ssp. *burrenensis* Cockayne ssp. nov. I began to get restless and walked about among the rocks with my lamp held aloft—no easy matter while carrying a net in the other hand. While I was in a precarious position

poised on top of a rock something green fluttered by, but took no interest in my light. This at least raised my hopes again, and I continued to flit about like a troubled spirit looking for a resting place among the endless rocks. Suddenly the spirit might have been seen to become frenzied—I had seen another green moth passing quite near this time, but not going to my light. I darted after it as best I could, stumbling about as I hurried, but at last I had him in the net—a grand fresh male *Luceria virens*! This was the first of about three which I caught on the wing. A few minutes later I was delighted to find a fresh female sitting at the top of a grass stem and I boxed it without difficulty. This led to more successes. I had found the secret now! The wind was blowing cold, and most of the moths were sitting on the tops of grass stems in the more sheltered cracks between the rocks. I found one *Euxoa tritici*, one *Cerapteryx graminis* (female), one *Tholera popularis* (♀), *Stilbia anomala* (many) besides several more *Luceria virens*.

On returning to the car I found my wife with several of the above kinds in boxes and one treasured *Luceria virens*—the only one attracted to light. I now visited the sugar patches for the second time, but not a single moth was found on either occasion.

We walked along the rocks with diminishing success until midnight, and by that time all good moths had retired to their hiding places away from the biting wind. We thought it best to follow their example and returned to Gort, as we had a long journey to Glengariff on the following day. In all we had noted 23 different kinds of moths that evening.

Killing *Luceria virens* so as to keep the colour I found difficult. Cyanide or fresh crushed laurel shoots were very disappointing. Strong ammonia used for a short time discoloured them, but within a few minutes of taking them out the colour returned.

To my surprise a few died naturally the following day and lost their colour. None produced the hoped for eggs. This may have been because I did not provide the correct grass and environment for this purpose, owing to travelling difficulties. Several females were kept alive for 48 hours.

I should be glad to have views of the best killing¹ and breeding methods for this species. I was at a disadvantage from a collecting point of view as I had little time and car space to give to this expedition.

I owe my moderate success to Dr. N. L. Birkett and to the help obtained from reading the various interesting articles by E. W. Classey, H. S. Robinson and Dr. E. A. Cockayne in *The Entomologist's Gazette*, April, 1951. *Luceria virens* was first discovered in Eire in 1941 by Capt. S. Wright, F.R.E.S.

¹[Stupefy with chloroform, set, and put the setting-block or board overnight in a biscuit tin containing a chloroformed swab.—P.B.M.A.]

This Matter of Ova

By AN OLD MOTH-HUNTER.

I have been trying to find out why we lepidopterists alone, in the whole world of Zoology, call the eggs of our quarry 'ova', and so far I have not been successful. The *Concise Oxford Dictionary* (1949, p. 818) defines 'ovum' as "Female germ in animals, capable of developing

into new individual when fertilized by male sperm, egg, esp. of mammals, fish, or insects [L.=egg]". Much the same words are used by the *Shorter Oxford English Dictionary* (p. 1408). Yet this does not satisfy me, because whereas my brother lepidopterists use it to denote the egg of a butterfly or moth my brother zoologists and ichthyologists do not use it to denote the egg of a Spiny Anteater, an Australian duck-mole or a shark. Nowhere have I ever read of a crocodile or a turtle depositing its 'ova'. Nor, again, do I find the word in any English scientific work on insects, from the Cambridge Natural History (Dr. Sharp) of 1895 to the modern textbooks of Dr. Imms, Professor Wigglesworth and others. It was unknown to Kirby and Spence in 1826.

So far as I have been able to discover, however, the term was used in Victorian times to denote the nucleus (only) of an egg; it does not seem ever to have been used to signify an egg as an entity. Oddly enough even those whose hobby is the collecting of eggs, the bird's-nesters, do not describe their trophies as 'ova'. It cannot be a mere *façon de parler* with us lepidopterists, for we do not allude to our breakfast dish as 'bacon and ova' nor do we eat a boiled ovum, served in an ovum-cup and eaten with an ovum-spoon. The unsuccessful batsman does not score a 'duck's ovum'; we do not pelt a poor performer with rotten ova nor do we teach our grandmothers how to suck them. And if we were to describe some person of dubious character as a 'bad ovum' I doubt if our hearers would understand what we meant.

Probably the truth of the matter is that the men who collected Lepidoptera in mid-Victorian times were sciolists—they loved to pretend to a knowledge of science which in fact they did not possess. And since it sounds—to the illiterate—very learned indeed to give a Latin name to a common thing they called the eggs of their quarry 'ova' in order to impress all and sundry with their erudition. Come to think of it, the lot of the lepidopterist in mid-Victorian times was not altogether a happy one: to take the field with a butterfly-net was to invite jeers and laughter, perhaps even a stone or two from some urchin. Nobody, not even the professional scientists, took butterfly-collectors very seriously. In sheer self-defence it was necessary for them to pretend to be scientists, for the word 'science' produced awe in the common folk. The other zoologists, who were able to pursue their hobby unadorned with net and collecting apparatus, could pass unscathed; so there was no need for them to seek the protection of Latin words for common everyday things. Unhappily the lepidopterists in their zeal got hold of the wrong end of the stick and referred to the whole egg by a term which the men of science reserved for the germ cell.

So this foolish habit has been handed down from father to son—for most of us have been initiated into the study of the Lepidoptera by someone older than ourselves. Perhaps we ought to be thankful that we do not have to call the wings of our moths 'pennae' and their legs 'crura' But to-day we are old enough to know better. We are all zoologists *sensu lato*: the lepidopterist who cannot identify, usually at a glance, the creatures of the woodlands, moors and fields is a rarity nowadays. Is it not time we came into line with our brother zoologists and biologists in this matter? Let us give up using this unscientific and rather silly archaism and call the eggs of our quarry EGGS. It is only one letter longer, and ink is cheap enough.

Mrs Glanville and Her Fritillary: II.

By P. B. M. ALLAN.

(Continued from Vol. 63, p. 294.)

I have not discovered who gave Mrs. Glanville's name to *Melitaea cinxia*. It was not Petiver—though he had more reason than anybody else to commemorate one to whom he was so much indebted on so many occasions—for in 1717 he calls a fritillary which *may* have been *cinxia* "The White Dullidge Fritillary" because it was "Found in the Wood, thereabouts [Dulwich] in May". Next year he was dead. Not unnaturally—for the species resemble each other closely—there was confusion, in his day and later, between *M. cinxia* and *athalia*. But Petiver *may* have distinguished them, for of one (which I take to be *athalia*) he wrote, in 1704, "Papilio Lincolnensis Fritillarius, fasciis subtus pallidis. The Lincolnshire Fritillary. First observed there, and given me by Madam Glanville. The curious Mr. Dandridge hath lately caught him not far from London." Of the other (usually considered to be *cinxia*) he wrote, in 1717, "Papilio Fritillaria minor, undulata, areis subtus albis. White Dullidge Fritillary," and adds the words which I have quoted above.

Note that he does not say of the Lincolnshire Fritillary that it was actually caught by Mrs. Glanville in Lincolnshire: it was "first observed there"—by whom he does not relate—"and" (perhaps a year or more later) "given me by Madam Glanville". The donor may have received it from a friend or correspondent in Lincolnshire and have passed it on to Petiver with a note as to its provenance. Apparently Mrs. Glanville enlisted the aid of others in her quest for insects; for in her letter to Petiver quoted in the first part of this paper she remarks in a post-script "I am just now making an interest with a young Gentlewoman that is going to her friends in Virginia, and also a young man of my acquaintance who is going with the fleet, and two Doctors of Ships . . . they promise to send me some fine insects".

Yet I am inclined to think that *both* Petiver's records—the Lincolnshire Fritillary and the White Dullidge Fritillary—refer to the same species, *M. athalia*. 'Tis true that of the former he says "fasciis subtus pallidis" and of the latter "areis subtus albis"; but this distinction (if distinction it be) is not very convincing, for *cinxia* no less than *athalia* has 'pale bands' on the undersides of the hindwings and both have 'white areas'. I possess a large fresh female *athalia* on which these bands are very pale indeed. We know that in former times *athalia* occurred in both Worcestershire and Staffordshire, and it might be argued that the range of *cinxia* too extended farther north in days gone by. But there is nothing—except Petiver's ambiguous description—to support such a suggestion and it seems more likely that the fringe of our southern seaboard has been the northern limit of the Glanville Fritillary's range for at least some hundreds of years; for its continental distribution extends only up to the summer isotherm of our south coast. Said Donovan in 1798, when the range of the British butterfly was much better known, "This is the rarest of the British Fritillary Butterflies, if we except Papilio Lathonia". Writing many years ago Dr. T. A. Chapman remarked "*M. cinxia* is now and probably has

always been confined to the south coast''. Be it noted also that there was an interval of thirteen years between Petiver's descriptions. Had he forgotten, in 1717, all about the description which he had penned in 1704, and the identical specimen had been put before him again, he might not have used the same words.

Petiver died in 1718 and three years later Eleazar Albin issued *A Natural History of English Insects*; but unhappily he makes no mention of *M. cinxia*. In 1747 Benjamin Wilkes began the publication of his *The English Butterflies and Moths*, and here (perhaps for the first time) appears "The Plantain Fritillary Butterfly". The caterpillar of this species, says Wilkes, "feeds on *Plantain*, *Clover* and *Grass*, changes to a *Chrysalis*, within a Web of its own spinning, upon the Surface of the Ground, at the Beginning of *May*, and the *Fly* appears fourteen Days after The Butterfly is swift in Flight, but may be taken if diligently attended to, in Fields of Hay-Grass, at the time above mentioned." I do not think there is any doubt that this description refers to *M. cinxia*; for *athalia* is a woodland species.

The next book on the British butterflies to be published in this country was Moses Harris's work *The Aurelian*, which was issued in 1766, and here for the first time—so far as I have been able to discover—*M. cinxia* appears under its present English name. Harris's words are not "I have named this butterfly from the ingenious lady . . ." but "This Fly took its Name from the ingenious Lady . . ." It is indeed a puzzle and since no prior mention of the name 'Glanville Fritillary' is known, and no book on the English butterflies was published in England between those of Wilkes (1747) and Harris (1766), it seems unlikely that the puzzle will ever be solved. An old letter or diary written by an entomologist which mentions a capture of "the Glanville Fritillary" between Petiver's death and the publication of Harris's book may of course be brought to light some day; but in default of such a happy *trouvaille* we must write off *M. cinxia*'s English nomenclator as "unknown". Possibly he was Dru Drury, of whom I have much to say in a forthcoming book; for Drury was the first authority on the English butterflies during the eighteenth century, the first to use Linné's *Systema Naturae*, and an entomologist of European repute. His splendid collection was arranged for him by Fabricius, who came to London especially to inspect it. Drury's influence on the entomologists of his day cannot be overestimated: he both employed and taught Moses Harris. It may well have been he who thought fit thus to honour and commemorate one to whom the English lepidopterists—and perhaps coleopterists too—were indebted for the discovery of so many species previously unknown.

Harris's—or Drury's—name for *M. cinxia* does not seem to have been immediately adopted. Dr. John Berkenhout, whose *Outlines of the Natural History of Great Britain and Ireland* appeared in 1769, gives Wilkes's name—the "Plantain Fritillary". Lewin, in 1795, has both names but gives priority to that used by Wilkes. Donovan (1798) follows Wilkes and so does Brown (1832). Haworth (1803), Miss Jermyn (1824) and Wood (1839) use Harris's appellation and since then most writers on the British butterflies have adopted *M. cinxia* to commemorate the "curious Gentlewoman" Mrs Elizabeth Glanville who raised the Flaming Iris from seed, whose "particular favorit" was "Mr. Charl-

ton's blistered butterfly", and who wished to know the Latin names of her captures no less than the English ones.

Current Notes

At another page we print an interesting paper by Dr. Lycaena Romei (granddaughter of our old contributor Signor Orazio Querci) on the abnormal scarcity of Lepidoptera—indeed of insects of all Orders—in Central Italy during 1951. In this connection we have received a letter from our correspondent in Hannover, Dr. MAX CRETSCHMAR of Celle, which indicates that although the emergences of Lepidoptera were undoubtedly abnormal in Germany no less than in other parts of Europe certain broods and certain species do not seem to have been affected adversely. Dr. CRETSCHMAR writes as follows:

"Undoubtedly 1951 was decidedly a poor year for butterflies in Germany. The winter of 1950/1, with its high humidity due to the mainly mild weather, was unfavourable to hibernating larvae and pupae, so that very few imagines were seen in the spring—which was cold and wet, though there was a short period of fine warm weather in April. At Celle the first brood of *Papilio machaon* was markedly rare, as were those of all Pierids and Lycaenids. At the end of June a few larvae of *P. machaon* were brought to me and these produced imagines of the second brood, of which I saw only one specimen flying out of doors. A collector at Dusseldorf reported that he saw scarcely ten specimens of either brood. On the other hand, a report has reached me that at Bielefeld (Westphalia) the larvae were so abundant on *Daucus* from August to October that one could have collected hundreds. Herr Hübner of Bielefeld tells me that the first brood was not rare there from the middle of May onwards and full-grown larvae were found as early as 1st July; this of course accounts for the plenitude of the larvae in the autumn. But Bielefeld is certainly a local exception.

"The first brood of *P. podalirius* was strikingly abundant on the Mosel and in North Bavaria (neighbourhood of Würzburg). The Melitaeas also (*aurinia*, *athalia*, *dictynna*, even the local *maturna*) appeared in their normal numbers, in fact they were rather commoner than usual, as were the Argynnids *selene*, *aglaia*, *niobe* and particularly *paphia*. *Heteropterus morpheus* and *Callimorpha dominula* also were plentiful. But these were the exceptions; all other species were much scarcer than in previous years."

In connection with our note on page 169 of last September's issue Herr GERHARD HESSELBARTH writes: "I think the long and abnormally heavy snowfalls in the alpine regions would have produced a scarcity of Lepidoptera in those parts, as the avalanches must have destroyed many of the hibernating pupae and especially larvae. In particular the populations of slopes facing south, where many larvae and pupae can always be found, must have suffered in this respect. Moreover, the melting of the snow occupied a much longer time than usual and this would have prevented many plants from producing early leaves at the usual season. In the same way the microclimate conditions deteriorated during the spring, and the larvae must have been exposed to moisture and cold much longer than in normal years. I agree with your con-

tention that it is wet and cold which kill so many Lepidoptera in the larval stage."

Notes on Life Histories, etc.

In our issue of last December (63: 295) we asked whether any of our readers has found, in the wild, the cocoon of *Abraxas sylvata*—and whether there is any truth in the assertion that when full-grown the larva lowers itself from an outermost branch by means of a silk thread. Our Editor recalls an experience of his own.

"On 6th September 1914," he relates, "a sunny day with no wind, I went with my cousin to beat for larvae of *Abraxas sylvata* in a wood near Limber, North Lincolnshire. On the edge of the wood I saw an isolated wych elm of no great height but with unusually long branches growing almost horizontally and noticed that its leaves were much eaten. We went to the tree and saw large numbers of full grown larvae on the grass scattered over the whole of the area shaded by the branches. Many larvae were hanging by threads and dropping down on to the grass. We sat down and began to pick them up, and all the time others kept dropping. We only moved our seats twice and collected about 500 full grown larvae, of which not one was parasitized.

"Here is the other side of the picture. Many of the larvae hanging by threads were smaller and were trying to climb up again. After reaching the grass none of the full grown larvae went down further as if about to enter the earth. Of those I took home the first went into the earth after 24 hours and the last after five days and some of the food provided was eaten. It is therefore doubtful whether dropping by a silk thread is the usual method of reaching the ground to pupate."

Notes and Observations

LARVAE OF *DEILEPHILA ELPENOR*.—Recent Notes on the effect of crowding on the colouration of larvae (*Ent. Rec.*, 63: 88, 173, 235) prompt me to record an observation which many lepidopterists may well have made though apparently it remains unrecorded. After the fifth moult last instar larvae of *D. elpenor* are usually dark brown or black; occasionally a magnificent green example will be found only lightly marked with black. During the first four instars the larvae are green, only the 'eye'-markings being approximately of the same colouration as the adult. However, on rare occasions small black larvae appear, as one did in September 1948 among thirty-six normal green phase examples feeding on a surprisingly small clump of *Epilobium angustifolium*, near London. I had always regarded small dark larvae as rare in this species until 1948 when I caught a female *elpenor* in my garden during August. Subsequently she produced thirty eggs. These hatched and the young larva fed up; nothing unusual happened until the third moult, when most assumed the dark colouration characteristic of adults. Moreover, the 'eye' spots were much redder than any I had seen on 'wild' larvae. Unfortunately I did not note at the time exactly how many remained green.

These larvae thrived within the limits of my small breeding-cage, but were much overcrowded when they were full-grown. After the final

moult all were dark and normal, but unfortunately the whole brood died just before pupation was expected, this possibly being indirectly due to overcrowding.

It is difficult to be certain that crowding was the cause of the larvae departing from normal and producing unusual colour variations, but on comparing these notes with those I have for 'wild' larvae it is significant that on the few occasions when I found small dark larvae they were feeding semi-gregariously on a small patch of foodplant.

In writing of this species it may be of interest to record that during 1948 I gave some adult larvae to my friend Mr. Derek Goodwin of Virginia Water. Some of these he gave to his tame jays, *Garrulus glandarius*, which are used to accepting anything offered by him as completely edible. The first jay bounded forward and was about to seize the large larva when it saw the striking 'eye' markings and immediately jumped back in apparent terror. Meanwhile another jay had found a larva which had been thrown to the ground and had landed in such a position as to make the 'eye' markings invisible. The bird snatched it and ate it with relish! By making further offers the jays became familiar with the 'eyes' and eventually ate larvae without hesitation, showing that they are in fact edible. Readers of this magazine who would be interested in a more detailed account of experiments with lepidopterous larvae and jays are referred to a paper by D. Goodwin in the 1951 edition of *The Ibis*, journal of the British Ornithologists' Union. —D. F. OWEN, Edward Grey Institute, 91 Banbury Road, Oxford. 29.xi.51.

PSEUDOIPS BICOLORANA FUESSL. IN LONDON.—A few years ago I recorded the capture of a specimen of this moth at rest on an oak trunk in Brockwell Park, Herne Hill, London. During August and September last (1951) I came across seven larvae of this species in Ruskin Park, Camberwell. This park is quite small, and although less than a mile from Brockwell Park one would hardly expect to find this showy moth occurring in such a built-up district. Another curious point is that in every case the larvae were on Turkey Oak (*Quercus cerris* L.). There are four very large trees of this species in the Park, and the larvae were taken ascending the huge trunks of these trees. Three were found on one tree at the same time and rather puzzled me at first. They were barely a quarter of an inch in length, green in colour, and dotted with silky hairs. They looked familiar to me, but it was some weeks before I realised what they were. They fed on the leaves of the Turkey Oak and have now all changed to a brownish pink colour and are hibernating. It might be mentioned that one of these trees is reputed to be the finest in London, both as regards size and its symmetrical growth. —S. WAKELY, 26 Finsen Road, Ruskin Park, London, S.E.5.

PIERIS NAPI ON WET MUD.—I was interested in the remarks of Dr. E. Barton White in the November issue of *The Entomologist's Record*, regarding the visits of male *Pieris napi* Linn. to excavated wet mud. During the early part of August 1951 I noticed this species visiting small heaps of wet, charred wood in a Huntingdonshire wood. The rides in this wood had been 'brushed' by the woodman, and the twigs and smaller branches collected in heaps in the rides and burnt. A shower

had damped the charred remains of the piles, and these proved very attractive to both sexes of *Pieris napi*. The males outnumbered the females, but sixteen butterflies were settled in close formation on one patch, and nine on a second patch. There were also one or two *Pieris rapae*, and all the butterflies concerned were skittish when approached closely, although they quickly returned when I walked away. This happened at about 4.30 p.m. B.S.T.—GEORGE E. HYDE, 20 Woodhouse Road, Doncaster. 21.xi.51.

PIERIS NAPI ON WET MUD.—Dr. E. Barton White will find a record of *P. napi* observed drinking at the edge of a woodland puddle on Bookham Common, Surrey, 11th August 1947, in *The Entomologist*, **81**: 109 (also five *P. rapae* drinking at wet mud). Scattered through our entomological literature are records of various butterflies feeding on various kinds of filth—horse, cow and bird-droppings, urine of man, horse, ass and goat, human perspiration, their own excretion, snail juice (on a thrush. “anvil”), decomposed rabbit, manure heaps, salt water from sand, rotting pears, wet tar, Slime Flux and a gamekeeper’s “larder” (crow, squirrel and stoat).—F. HEWSON, 23 Thornhill Drive, Gaisby, Shipley.

A NOTE ON MACROTHYLACIA RUBI LINN.—I was very interested in Mr. T. D. Fearnough’s Note (*Ent. Rec.*, **63**: 115) on *M. rubi* and its abundance on the Derbyshire moors and I decided to test its applicability to my district. On 22nd September 1951 I began searching the moors near Darley. Until I learned the ‘knack’ I spent one hour searching the heather and found only seven *rubi* larvae. I then noticed that the caterpillar rests on the grass tufts near the heather, so I confined my attention to these. In a few minutes I found twenty more.

In order to check up on the abundance of the species a little more accurately I moved to another part of the moors and there I searched a strip 100 yards long and 2 yards wide. In ten minutes I found 55 larvae. The barometer stood at 30.05 in. and the thermometer at about 50-55° F. The wind was blowing from the south.

On 6th October I returned to the same place. Ignoring the shooting parties I searched another strip of moor about 200 yards from the other. In exactly fifteen minutes I found 53 *rubi* larvae. The temperature was 55-60° F., the wind was south-east, and the barometer 30.44 in. The time of day was the same as before, namely 5.0 p.m.

I moved quickly to another part of the moor and searched a similar strip but with a more northerly aspect. In thirty minutes I was able to find only 27 *rubi* larvae.

When I housed my larvae on 7th October I counted 132; but when I counted them again on 20th October I found that 60 had succumbed to ichneumon attacks. There were two kinds of ichneumon cocoons; unfortunately I do not know their names. On 3rd November I again counted my larvae and found that 16 more were ichneumonated and 56 still healthy.

I visited the same moors on 10th November and searched for an hour, but found no larvae of any kind. The wind was cold and sharp, the barometer was 29.65 in.; perhaps that was the reason why *rubi* was absent.

I have now housed the surviving 56 larvae in the approved pattern hibernaculum with a growing clump of heather and am awaiting the result of the experiment with interest. I hope that I shall succeed in rearing some through to the perfect insect, but I am worried about white spots which are appearing on some of them; this may be some kind of disease. In any case it would seem that at least 50% of *M. rubi* are destroyed by hymenopterous parasites.—J. H. JOHNSON, 53 Knighton Street, Hepthorne Lane, Chesterfield.

THE WHITE AND PALE YELLOW FORMS OF *LYCAENA PHLAEAS* LINN.—The white form of *Lycaena phlaeas* was, until 1906, always referred to as ab. *schmidtii* Gerhard and still is by many authors. In his *British Lepidoptera*, vol. 8, on page 358, Tutt stated that Gerhard's figure was not of the white form but pale cream and that the white one must be named *alba*, the name *schmidtii* being reserved for specimens of a creamy tint variously described by writers as straw colour, pale yellow or as intermediate between the type form and white. This is a somewhat staggering conclusion and certainly not what Gerhard intended since it is obvious that he was dealing with white aberrations from his mention of the plates in Hübner and Esper, the former in *Eur. Schmiett.*, I, pl. 147, f. 736, in which the black parts are replaced by pure white and the latter, *Eur. Schmiett.*, pl. 40, f. 5, in which the copper ground is replaced by pure white. This figure is strongly tinted with blue which makes it look somewhat more white than Gerhard's figure.

The figure in Gerhard's *Monographie* is of a white insect, the left wings being whiter than the right which are very slightly more drab; the figure of the underside also is of the white form. The colouring may vary in different copies of the work but the fact that Esper's white insect is referred to is sufficient to establish the fact that the white form was being named and not the pale yellow variations which Tutt insists should all come under the name *schmidtii*.

Specimens with white ground colour are therefore:—

ab. *schmidtii* Gerhard: *Monog. Eur. Schmiett.*, p. 7, pl. 10, f. 3, a-b 1853. = *alba* Tutt., *Brit. Lep.*, 8, pp. 353 and 355, 1906.

Tutt is also wrong in his description of the ab. *cuprinus* of Peyerimhoff: *Cat. Léop. d'Alsace*, 1st ed., p. 13, 1862, in which he says "pallide lutea" (pale yellow). If he were right the name would apply to the straw or pale yellow examples he places under *schmidtii*, but on looking up the original description I find that it reads "elle est d'un jaune de laiton brillant", brilliant brassy yellow, and therefore almost certainly the same as Tutt's own *intermedia* (*Brit. Butt.*, p. 153, 1896), which also has the ground colour brassy.

It would seem therefore that the pale straw or pale yellow examples are without a name.—A. L. GOODSON, 26 Park Road, Tring.

THE DORSET SWALLOWTAIL BUTTERFLY.—I have read with the greatest pleasure Mr. R. F. Bretherton's researches into the subspecific status of our early British Swallow-tail butterfly records; it is a subject that has interested me ever since *bigenerata* was known to occur here. With regard, however, to Dale's surviving specimen it would be interesting to know in whose handwriting the label is? Tutt pointed out (*Ent. Rec.*, 19: 193) that many of the labels in the Dale collection

are in Mr. C. W. Dale's handwriting, often referring to specimens taken many years before he was born and that although no doubt he had materials in his possession to serve as a guide, details like these, added 50-90 years afterwards, could not be put in the same category as labels placed by the captor on a specimen and preserved in a collection where the labels could not possibly be shifted.

We now know that Mr. C. W. Dale had his father's diary to guide him, but at the same time if the label is in the son's writing there is no guarantee that the *machao*n is correctly identified, especially as J. C. Dale collected others from Whittlesea and Norfolk. Without looking at the labels I should in many cases hesitate to identify particular insects of my own taking from say thirty years ago, let alone those taken by my father at an earlier date.

It must also be remembered that C. W. Dale was a bit optimistic at times about records. Amongst other insects he purchased the "First two British Argiades" (figured in Dr. Ford's *Butterflies*). Of this pair Octavius Pickard-Cambridge wrote (*Entomologist*, 40: 236) that he had had some correspondence with the Rev. J. S. St. John on the subject, the result of which was his conviction that their origin was Continental and that when they came into the auction room in London there was very little faith in them as genuinely British specimens. We all know these "fine sporting lots" that crop up from time to time. C. W. Dale wanted a British *argiades* and, like old Javvers with the "Anomalopteryx jejunus" in Wells' yarn, he got it.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliffe-on-Sea. 13.xi.51.

[Before accepting anything that emanated from Mr. C. W. Dale our readers would do well to look up the following references to him in this magazine:—4: 112, 142, 201, 293; 5: 115, 150, 176; 6: 208; 8: 105.—Ed.]

FEMALE *SPILOSOMA LUTEA* HUFN. ATTRACTING *ARCTIA CAIA* L.—On a night in 1949 I put a virgin *Spilosoma lutea* Hufn. female in a gauze covered box in an assembling-trap. Next morning there were 23 *S. lutea* males and one *Arctia caia* male in the trap. There was of course no light in the trap and I would like to have an opinion on what attracted the *caia*.—DAVID WRIGHT, Whitehill House, Bordon, Hants. 31.xi.51.

[There are many records showing that among the *Arctiinae* female scents are sometimes non-specific. See, for example, *Ent. Rec.*, 54: 62 (May 1942, No. 5).—Ed.]

A RARE ABERRATION OF *DEUTERONOMOS ALNIARIA* LINN.—I am indebted to the Rev. K. M. Dunlop for an opportunity of examining a moth of the genus *Deuteronomos* in his collection and taken by him near Athy, Co. Kildare, in 1940. The moth, which is a female, was not found to correspond exactly with any of the British members of this genus, its general appearance being that of a female *D. alniaria*, the Canary-shouldered Thorn, but with no 'Canary' shoulders. The usual canary yellow colour of the thorax is absent and is replaced by the normal ochreous colour of the abdomen. The specimen has since been examined by Mr. W. H. T. Tams, who confirms that it is in fact *D. alniaria*.

It has now been pointed out to me by Dr. E. A. Cockayne that this form of *D. alniaria*, which is evidently extremely rare, has been named *ab. concolor* Lempke (*Tijdschr. v. Ent.*, 1951, **94**, 291), from a specimen bred from eggs, among a number of normal ones, in 1907, and recorded by Oudemans (*Tijdschr. v. Ent.*, 1908, **51**, iii).—E. S. A. BAYNES, 2 Arkendale Road, Glenageary, Co. Dublin.

Notes on Microlepidoptera

By H. C. HUGGINS.

Roots of tansy dug up in the winter months will usually contain plenty of *Hemimene flavidorsana* Knaggs. I have seldom seen even a garden clump which did not contain this insect. Tansy is usually, if dug up in the wild, also infested by a number of *H. sequana* Hub. and sometimes by *H. saturnana* Guen. *Saturnana*, however, is in my experience much more local than the other two; it is nevertheless, common in North Essex and Suffolk. The roots should be potted up and left out of doors till the last week in May.

The larva of *Endothenia nigricostana* Haw. can be obtained in winter and spring by collecting the lower part of the stems and the top of the root-stock of *Stachys sylvatica*. These dead stems may be tied in bundles and left in the open air till May and do not require potting. It may be helpful to remember that the stem of *Stachys* is square in section and hollow, whilst that of the common nettle, which usually grows with it, is more or less round and solid.

Dead stems of *Alisma plantago* should now be collected for the larva of *Phalonia alismana* Rag. which winters and pupates in them. I have found this larva rather difficult to rear as the dead stem in winter is usually standing in several inches of water, which tends to keep the cellular pith moist. I have succeeded pretty well, however, by tying the stems in bundles, leaving them out of doors, and throwing a bucket of water over them whenever I remembered.

In his notes on Norfolk collecting in the *Record* for October 1951 (63: 223) Canon Edwards suggests that he might have taken more *Oxyptilus distans* Zell. if he had searched in early July. To save him and others from future disappointment it may be well to give a few facts on the dates for this Plume, of which I have had rather an extensive experience. *Distans* has two broods, which tend to overlap as both come out over a long period, and occasional specimens may turn up at any time from the beginning of June till August. My earliest date is 9th June 1924, when I took 6 perfect ones at Deal, and my latest 20th August 1951, when I netted and released two slightly worn specimens on the Breck near Icklingham.

In a normal year I should search for *distans* from 10th to 17th June, or the first fortnight in August, to be likely to catch either brood at its peak. The dates do not seem to vary much in different localities. I see in my set "Deal, 9.vi.24", "Deal, 10.vi.28", "Sandwich, 10.vi.30", "Tuddenham, 9.vi.35", "Tuddenham, 24.vi.34", "Brandon, 6.viii.47", "Brandon, 2.viii.48". If possible it is as well to have a go at both broods as the first is almost entirely the dark form, *distans*, and the second the light one, *laetus*. The past season has been so abnormal that

anything might turn up at any time; but in a normal year the first and second weeks in July would be between the broods, and only a straggler or two might be expected.

Practical Hints

By the time these lines appear in print *Erannis leucophaearia* will probably have been reported on the wing. The males prefer fences to tree trunks as resting places, especially fences which face north and west and are near oaks, and in its years of plenty some fine forms can usually be collected during a morning's walk. January 3rd is the earliest date for its appearance that has come to our notice so far.

Poecilocampa populi is often to be found on street lamps throughout January. The earliest date on which we have heard of it being taken is 23rd October (1950) and it is usually on the wing throughout November and December. In some years there seems to be a pause in emergence after November until January. Females come to light as well as males and these will usually yield eggs. We have taken eighteen in a few minutes from a single street lamp.

January is a good month for egg collecting. A winter's walk among birches will usually supply the field lepidopterist with eggs of *Trichiura crataegi*—oval and rather large, laid in short 'ribbons' of 3 to 8, not end-to-end but side-by-side. At first they are sparsely covered with fluff from the female's anal tuft, but this is soon washed off by rain. They are laid about six inches from the extremity of the twig, which they match closely in colour.

Phigalia pedaria usually begins to appear at the end of this month. Fences, tree trunks, and walls in and about towns are the normal resting places for the male. It comes readily to light and varies much in ground colour, from quite a light yellow to almost black. The wingless females can sometimes be found in the crevices of large oaks and, occasionally, ash. Rarely, the moth emerges in late autumn—a friend has taken it on 15th November (1948).

Other species to be taken in January are *Erannis aurantiaria*, *E. marginaria*, *E. defoliaria*, *Theria rupicaprararia*, *Operophtera brumata* and *O. fagata* (*boreata*). These are best collected with a lantern after dark as they sit (often paired) on the outermost twigs of hedges. *E. defoliaria* (in our experience, uncommonly difficult to breed!) occasionally appears in October; *marginaria* is usually not out until early February; our earliest date for *T. rupicaprararia* is 11th January; *O. brumata* and *fagata*, both of which first appear in November, are generally on the wing throughout winter. Another species, *Alsophila aescularia*, is sometimes out early in February—our earliest dates are 8th (1946) and 9th (1949).

Collecting Notes

MARGARONIA UNIONALIS HUB. AND LOXOSTEGE PALEALIS SCHF. AT DEAL.
—On 9th September 1951 I took a good specimen of this beautiful Pyralid at buddleia flowers after dusk in my garden here in Deal. On 19th and 22nd August I took two specimens of *Loxostege palealis* also in my garden, one at light and one at buddleia blossom.—CECIL M. GUMMER, 14 Manor Road, Deal, Kent. 15.xi.51.

STERRHA DILUTARIA HUB. IN CAERNARVONSHIRE.—The Rev. E. S. Lewis and myself were fortunate in discovering a number of this species in Caernarvonshire in July 1951. I showed my captures to Dr. C. G. M. de Worms and he took one of them to Mr. D. Fletcher of the British Museum for examination, and he confirmed its identity. I think this is the first record of this species for North Wales.—S. GORDON SMITH, Estyn, Boughton, Chester. 14.xi.51.

DIPTERA

Notes on some Surrey Trypetidae

By M. NIBLETT, F.R.E.S.

The following notes refer to further recent attempts to breed Trypetids from their larvae.

Philophylla heraclei L.—On 8.vii.51 a few leaves of *Apium nodifolium* mined by the larvae of this species were found at Bookham Common. The larvae left the mines to pupate in earth, the flies emerging 21.vii and 2.viii.51.

Acidia cognata Wied.:—At Burford Bridge, 12.x.50, I found numerous mines caused by the larvae of this species in leaves of *Petasites vulgaris* (Butterbur). The majority of the larvae had left the mines but a few still remained; flies from these emerged in early June of the following year.

Spilographa (Trypeta) zoe Mg.:—Mined leaves were found on *Senecio jacobaea* at Addington, on *Chrysanthemum maximum* at Wallington, and on *Senecio squalidus* at Epsom Downs, in late June and early July: flies from these larvae emerged in late July and early August. *S. squalidus* is I believe a new host record for this species.

Chaetorellia loricata Rond.:—Since I recorded breeding this species from flower-heads of the Large Knapweed (1950), I find that I had already bred one male, 23.vi.46, from some flower-heads collected near Headley, 11.viii.45; one male also emerged 7.vi.51 from a larva collected at Mickleham Downs, 14.ix.50. It is apparently a double-brooded species and is undoubtedly far from common; the few flies I have bred have come from several thousands of its host-plant collected from many localities.

Ceriocera cornuta F.:—Numerous flower-heads of the Large Knapweed collected during the last few years have given comparatively few larvae of this species. I have again found that many of the larvae leave the heads to pupate in earth, also a few flies have emerged in the first year, this time in September from larvae collected in mid-July.

Trypeta (Orellia) tussilaginis F.:—Some years ago I discovered that the larvae lived in the achenes of Burdock, where they pupated, the flies emerging in the following year. On 18.vii.50 heads of *Arctium majus* were collected at Banstead Downs, from these one male *tussilaginis* emerged 14.ix.50; from another series collected at Addington, 25.vii.50, a male *tussilaginis* emerged 6.x.50. I have bred this insect in some numbers over a considerable period but have never before had it emerge in the first year.

Hoplochaeta (Noeeta) pupillata Fln.:—Flowers of *Hieracium muro-rum* were found at Walton Heath and Epsom Common in early August,

swollen by the larvae of this species. Flies from these emerged towards the end of the month, two also emerging in the following May.

Oxyna parietina L.:—From stems of *Artemisia vulgaris* collected at Worms Heath, 31.x.46, two of the larvae ate their way out in the following April and pupated within a week. From stems collected at Banstead Downs, 30.xi.49, five larvae came out of the stems, again in April, and pupated shortly after. Flies from both series emerged in the following May, as did flies whose larvae had pupated in the stems in the normal manner. I appear to have omitted this species from my list of Surrey Trypetidae (1947). I have found the larvae also at Epsom Common and Riddlesdown.

Paroxyna elongatula Lw.:—Numerous flower-heads of *Bidens tripartita* were found at Epsom Common 6.ix.51, containing the larvae of this species; the flies emerged at the end of the month. This is a new locality for the insect.

Tephritis bardanae Schr.:—A number of flower-heads of *Arctium majus* were collected at Addington 25.vii.50, when transferring these to a container some of the achenes fell out and it was noticed that among them were several larvae; during the next few days more larvae were seen. Investigation showed that the larvae had been living in the seeds and when approaching maturity, had eaten their way out to pupate. These larvae were placed on damp sand which they made no attempt to enter, pupating on the surface; the remaining larvae pupated in the normal manner, the puparia forming a compact mass in the flower-heads. Flies from both series emerged at the end of August.

Trypanea stellata Fuess.:—I have again bred this species; from a number of flower-heads of *Hieracium murorum* collected at Epsom Common 10.viii.50, a pair of flies emerged 18.viii.50. From a few heads of *Senecio squalidus* 21.viii.51, one fly emerged 2.ix.51; this I believe is an unrecorded host-plant.

REFERENCES.

1947. Niblett, M. *A List of Trypetidae (Diptera) from North-east Surrey. Ent. Rec.*, **59**.
 1950. Niblett, M. *Some further notes on Trypetidae. Ent. Rec.*, **62**.

RECORDS OF NEPHROCERUS FLAVICORNIS ZETT.—Verrall (1901, *British Flies*, **8**: 78) recorded this large Pipunculid only from the New Forest and suggested an association with *Cicadetta montana* Scop. Mr. R. L. Coe has recorded this species from Ashted (26.6.32), in Surrey (1932, *Ent. mon. Mag.*, **68**: 203) and there is another specimen from Surrey in the British Museum Collection (Ewhurst, 3.7.36, coll. A. M. Low). Mr. J. E. Collin took a male at Chippenham Fen, Cambridgeshire, on 9th July 1928 by sweeping herbage on the borders of the Fen. This year Mr. C. N. Colyer found this species in Loxley Wood, Shapwick, Somerset, on 7th July, and the writer picked up a dead male off some nettles in Rothamsted Manor Wood, Herts., in June. These records away from the New Forest suggest an association with a more widespread, large Homopteron. The short flight period, end of June to early July, may account for the species' apparent rarity.—B. R. LAURENCE, 31 Sherwood Road, Luton, Beds., 14.xi.51.

[I have taken *Cicadetta montana* in Endless Wood near Chiddingfold, Surrey.—E. A. C.]

NOTES ON SAPROMYZIDAE.—The larvae of Sapromyzids are supposed to develop in decaying vegetable matter. On two occasions in August 1950 a female *Peplomyza litura* Mg. was found with its ovipositor inserted into cracks in the bark of spruce trunks at Rothamsted, Herts. A male *Minettia inusta* Mg. and a female *Lyciella rorida* Flin. were bred in May 1951 from puparia found beneath bark at Rothamsted. The puparium of the *Minettia* was found in an old stump at the edge of a field, and the *Lyciella* came from a decayed trunk in a wood.—B. R. LAURENCE, 31 Sherwood Road, Luton, Beds., 14.xi.51.

FOOD OF PLATYSTOMA SEMINATIONIS LINN.—A single *Platystoma seminationis* (sex not recorded) was seen sucking a dead larva of *Nymphalis io* L. on nettles at Fancott, Beds., on 12th June 1946.—B. R. LAURENCE, 31 Sherwood Road, Luton, Beds., 14.xi.51.

ASILUS CRABRONIFORMIS LINN. IN SOMERSET AND WILTSHIRE.—With reference to Mr. Leonard Tatchell's recent Note (*Ent., Rec.*, 63: 256) on *Asilus crabroniformis* in East Dorset, I have seen this insect in East Somerset (Bruton) and South Wilts. (Homington), both places being close to the Dorset county boundary. In each case the locality was a dry hillside.—H. SYMES, 52 Lowther Road, Bournemouth.

COLEOPTERA

Longicorns from North Hertfordshire

By R. S. FERRY.

My beetle collecting is principally confined to an area within three miles of my home at Welwyn, which is situated in the area covered by Hitchin and District Regional Survey Association. The Natural History of the Hitchin region, edited by Reginald Hine and published in 1934, records only nine species. Of these I have not found *Molorchus minor*, *Rhagium bifasciatum*, nor *Saperda carcharias*. It would appear that *Molorchus minor* has been recorded only twice and *Saperda carcharias* but once.

My interest in the Coleoptera of this area was first aroused when I picked up, one evening in July 1944 while on Home Guard duty, a ♂ *Prionus coriarius*. More specimens could probably be obtained by visiting our local woods in the autumn evenings as its habits are crepuscular.

Rhagium mordax is very common. I have found it in large numbers, in all stages, during the winter and early spring under the bark of fallen oaks. Surprisingly few adults have been noted during the summer months. I still have to find *R. bifasciatum*.

Stenocorus meridianus is to be found in June and July of each year in a mixed hedgerow adjacent to our house. The type form and the black aberration are evenly distributed.

Grammoptera ruficornis and *Alosterna tabacicolor* are common in my orchard and can be taken by sweeping the herbage. *Leptura livida* is abundant in three small areas during June on cow parsnip and ox-eye daisies.

I first saw *Strangalia quadrifasciata* flying in a nearby wood in July 1946 and by careful search found it in June and July in the following

two years in a very restricted area on bramble, ragwort, cow parsnip and thistle. Many colour forms of *S. maculata* have been taken in this wood and on wild flowers growing along our lanes. I am indebted to Mr. Selwood, a local gamekeeper, for bringing me many specimens. *S. melanura* is more local but is fairly common in June on bramble blossom.

Aromia moschata has been recorded within six miles of my home. Personally I have found this species only at one station in thirty years of general collecting. In this case I was directed by my friend Mr. A. A. Allen to a Hertfordshire locality some twenty miles from here. In August 1946 it was abundant on willows and again in August 1948.

I take *Clytus arietis* each year in my garden and generally in the district.

Mr. Allen beat a specimen of *Pogonocherus hispidus* from a nearby holly tree on the 18th August 1946, and last September a schoolboy entomologist had the fortune of having one settle on his neck while walking in my garden! Although I have frequently beaten the holly and ancient fruit trees in my orchard I have as yet to meet with success.

I have taken only three specimens of *Leiopus nebulosus* in this district. The first two were taken by beating aspen in June 1946 and June 1947. The third was taken in flight on a hot day in June 1950 when I took seven different species of Longicorns within two hundred yards. *Saperda populnea* has been taken on aspen at one particular station.

One old hawthorn tree in my garden can generally be counted on to produce, in June, a small series of *Tetrops praeusta*.

Agapanthia villosoviridescens is to be found in a local swamp on *Heracleum* and on thistle. My wife first took a single specimen on the 5th September 1946. A series, including the black form, was taken on the 1st July 1950 and this year (1951) a further specimen was taken on the 15th July.

TWO UNCOMMON WEEVILS IN KENT.—On a trip to the Isle of Grain (Thames Estuary) towards the end of June 1950, Dr. A. M. Massee and I had the satisfaction of finding for the first time the very local *Dorytomus validirostris* Gyll. The beetle was present in considerable numbers on some black poplars—most of our specimens, however, being taken by sweeping the grass beneath the trees—and we each secured a fine series. On 9th August of that year I turned up an odd example under a piece of bark near the base of the trunk of a large black poplar in a field at Ham Street, in the same county, together with its larger congener *D. longimanus* Forst. Neither species was to be found by beating the lower branches of this tree, nor by sweeping under it. I am not aware of a previous Kent record for *D. validirostris*, which though it has occurred in a few places around London, and elsewhere, seems to have its headquarters in parts of East Anglia.

On the first occasion mentioned above, a specimen of *Otiorrhynchus raucus* F. was found walking up one of the poplar trunks and a second beaten from the foliage of another tree in the same row. This rather rare weevil is generally taken at roots of low plants in chalky and sometimes sandy places, and has been recorded as doing damage to pear trees on the Continent; but I know of no previous case of its association with poplar. Dr. Massee takes it in a sand-pit at Aylesford and more

sparingly on the downs about Maidstone, and I found two specimens last August under herbage in a chalk-pit at Darenth (also in Kent).—A. A. ALLEN, The Tiled House, 63 Blackheath Park, London, S.E.3.

A FEW ABNORMALLY LATE DATES FOR COLEOPTERA, 1951. The following were captured from two to six weeks later than I have noted them in any former year:—

Athous hirtus Hbst.—Sevenoaks, Kent, 22.viii; *Cryptocephalus hypochoeridis* L. and *Oedemera lurida* Marsh.—Otford, Kent, 10.ix; *Cryptocephalus labiatus* L.—Ham Street, Kent, 12.ix; *Anaspis pulicaria* Costa—Darenth, Kent, 21.ix; *A. lurida* Steph. (= *subtestacea* Steph.)—Blackheath, London, 18.viii (3); *Scraptia testacea* Allen—Windsor Forest, Berks., 28.vii; *S. fuscata* Mull.—ditto, 2.viii.

With the exception noted all were single females; the last two beaten (as usual) from old oaks, the rest taken by sweeping. On the date last mentioned both sexes of *Malthinus fasciatus* Ol. were still quite common on oaks, whereas normally a few females alone persist into early August.—A. A. ALLEN, The Tiled House, 63 Blackheath Park, London, S.E.3. 13.xi.51.

Fifty Years Ago

(From *The Entomologist's Record* of 1902).

SPREAD OF BUTTERFLIES INTO SUITABLE LOCALITIES.—It is curious how butterflies manage to discover for themselves congenial localities. The hill on which *Polyommatus bellargus* appeared for the first time in 1899, and on which it now seems to have established itself, was, when I first knew it, covered with trees and dense underwood, on the outskirts of which *Brenthis euphrosyne* and *Enodia hyperanthus* used to roam, and *Dryas paphia* was occasionally seen. In the seventies the place was converted into cornland. Then the bad years came and corn was no longer sown. Other crops were tried but nothing seemed to answer, and for the last six or seven years the land has been left uncultivated, and is covered in some places with heather, but principally with coarse grasses, bramble, marjoram, thyme, wild strawberry, burnet, ragwort, and here and there *Hippocrepis comosa*. *Brenthis euphrosyne*, *Enodia hyperanthus* and *Dryas paphia* all disappeared with the woods, and have not come back, although the two former, at any rate, are common enough half a mile away. The first local butterfly to colonise the place was, strangely enough, *Nisoniades tages*, which must have travelled at least two miles. In 1899, a single specimen of *Polyommatus corydon* was seen, now it is abundant, *P. bellargus* appeared as above stated in 1900, and is extending its range. In 1901 the place was prospected by *Melanargia galathea*, and it is to be hoped that it will be found suitable.—A. W. CLARKE.

AUTUMNAL WORK AT BOSCOMBE.—Both sugar and light failed in this district in the autumn of 1901, and ivy was very little better. The only good insects I took were four *Leucania vitellina* and one *L. albipuncta*, two of the former at sugared trees and two at sugared sunflowers. These latter I find a very attractive bait.—R. B. ROBERTSON.

Current Literature

ATLAS DES DIPTÈRES DE FRANCE, BELGIQUE, SUISSE. By E. Ségué. 2 Vols. $7\frac{1}{4} \times 5\frac{1}{4}$ ins., with a total of 360 pp., 24 coloured plates (292 figs.) + 156 black and white text figs. Published by N. Boubée & Cie., 3 Place Saint-Andre-des-Arts, Paris (VI). 1951. (In French.) Price 750 fr. each Vol.

This work, starting with a very brief introductory instructional chapter on the collecting, mounting, preservation and study of Diptera, and followed by a condensed but useful description of the morphology and biology of the Order, is devoted, in the main, almost entirely to short descriptions (in many cases all too short), habits, habitats and distribution of the 448 species figured, which include 10 species of flea (Siphonaptera). In addition a general description is given of each family, including a brief life-history of one or more of the typical species, with special reference to groups of particular economic importance.

Owing to the complete absence of any diagnostic Tables, the value of such a work to most students of Diptera, whose primary requirement is a reliable means of identification of species, is not easy to assess, but as an adjunct to available systematic works it should nevertheless prove a useful book of reference. The text figures, in the author's well-known style, are excellent, but many of the species depicted in colour are less convincing.—E. A. F.

A welcome reprint of one of the rarest British books on Entomology has been issued by Mr. ERIC W. CLASSEY: the *PRODROMUS LEPIDOPTERORUM BRITANNICORUM* of Adrian Hardy Haworth. The sub-title explains its contents: "A Concise Catalogue of British Lepidopterous Insects, with the Times and Places of Appearance in the Winged State." Originally published at Holt, Norfolk, in 1802 this facsimile reprint will be welcomed by all who are interested in the history of Entomology in England. The price is 15s. net.

Obituary

We regret to record the death, on 29th October last at Bourton-on-the-Water, Gloucestershire, of Lieut.-Col. CHARLES DONOVAN, Indian Medical Service (retd.), at the age of 88. He was the first to compile a critical List of the Lepidoptera of Ireland, rejecting many of the older dubious records and noting those which required confirmation. A good field lepidopterist, he succeeded in rediscovering the habitat of the White Prominent, *Leucodonta bicoloria*, in County Kerry, whence it had been recorded by Peter Bouchard in 1859, and by beating birches secured 18 larvae.

We also regret to record the death, on 13th November last at Monk's Soham, Suffolk, of Mr. CLAUDE MORLEY at the age of 77. He was interested in all Orders of insects and was secretary of the Suffolk Naturalists' Society for many years. For some time he specialised in the Ichneumonidae and between 1903 and 1914 produced his *Ichneumonologia Britannica* in five volumes, as well as (1910) a Catalogue of the Chalcididae.

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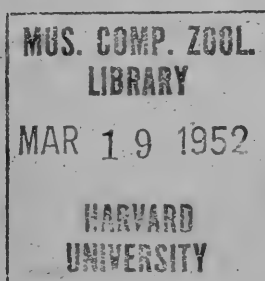
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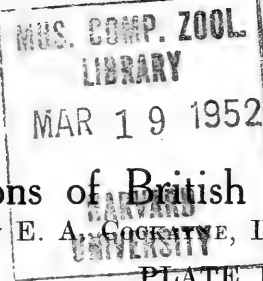
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Aberrations of British Macrolepidoptera

By E. A. COCKAYNE, D.M., F.R.C.P.

PLATE II.

[The following aberrations are in the Rothschild-Cockayne-Kettlewell collection in the British Museum.]

Triphaena comes Hübner ab. **deprivata** ab. nov. (Fig. 1).

Forewing brownish fawn with the markings obsolescent. Hindwing whitish grey with ill-defined darker border and no lunule closely resembling the hindwing of *Amathes sexstrigata*.

Type ♂: Perth. (Bright coll.) Rothschild coll.

Triphaena comes Hübner ab. **citrina** ab. nov.

Hindwing lemon yellow.

Type ♀: Loc. incog. (Baron Bouck coll.) Cockayne coll.

Recorded in the *Young Naturalist*, 1888, 121, and in the *Entomologist*, 1868, 4, 53, in an account of C. S. Gregson's collection. The specimen has no dark lunule.

Triphaena comes Hübner ab. **fumosa** ab. nov. (Fig. 2).

Thorax and forewings smoky brown with the usual markings visible. Hindwings smoky brown with no trace of the usual orange colour, band black. Abdomen smoky brown. Underside entirely smoky brown.

Type ♂: Harpenden, Herts., 5.viii.1948, taken in a light trap by C. B. Williams. B.M., 1948, 565.

Specimens of this form from the southern counties have been incorrectly recorded from time to time as ab. *curtisii* Newman.

Triphaena pronuba Linnaeus ab. **attenuata** ab. nov. (Fig. 3).

The usual black band on the hindwing is very narrow and only marked by a few black scales between nervures 3 and 4.

Type ♀: Bexley, 31.viii.1902, J. Greenwood. (Bright coll.) Rothschild coll.

Triphaena pronuba Linnaeus ab. **nivea** ab. nov. (Fig. 4).

Head, thorax, abdomen, and forewings whitish with a faint ochreous tint; reniform dark externally and below, subapical mark small but black and distinct, there is sparse irroration of darker and greyer scales on the forewing giving it a hoary appearance. Hindwing; whitish orange with the usual black band replaced by pale grey.

Type ♀: Swansea (C. G. Barrett coll.) Banks coll.

Triphaena pronuba Linnaeus ab. **nigribasalis** ab. nov. (Fig. 5).

Forewing—the area between the basal and antemedian line heavily powdered with black scales and with the lines themselves black; the marginal area is dark brown and then there is a dark brown band just internal to the subterminal line; the rest of the ground colour is paler. Hindwing—normal.

Type ♀: Rainham, Essex, 1896, C. R. N. Burrows. B.M., 1949, 586.

Lampra fimbriata Schreber ab. **albida** ab. nov.

The ground colour of the thorax and forewing lacks the usual ochre-

ous or red brown tint. Hindwing—the orange colour is replaced by very pale cream colour, the black marginal band is normal.

Type ♂: Folkestone, vii.1905. Rothschild coll.

Phalaena (Naenia) typica Linnaeus ab. **brevipennis** ab. nov.

Fore and hindwings very short and broad with much increased convexity of the termen. Neuration complete.

Type ♂: Starcross, Devon, bred by G. T. Porritt.

Allotype ♀: same data.

Figured by Barrett, Plate 217, 1d.

Several ab. *brevipennis* with a much larger number of normal moths were bred from eggs laid by a normal female captured at Starcross, S. Devon, by G. T. Porritt. It is probably recessive.

Anarta melanopa Thunberg ab. **clara** ab. nov. (Fig. 6).

The ground colour of the forewing is grey; the basal, antemedian, and postmedian lines are distinct and the subterminal line is normal; a dark median shade runs through the reniform; the area between the antemedian line and the median shade is free from markings and the orbicular indistinct so that a broad clear band of grey crosses the wing.

EXPLANATION OF PLATE II.

- Fig. 1. *Triphaena comes* ab. *deprivata* ♂. Type.
 Fig. 2. *Triphaena comes* ab. *fumosa* ♂. Type.
 Fig. 3. *Triphaena pronuba* ab. *attenuata* ♀. Type.
 Fig. 4. *Triphaena pronuba* ab. *nivea* ♀. Type.
 Fig. 5. *Triphaena pronuba* ab. *nigribasalis* ♀. Type.
 Fig. 6. *Anarta melanopa* ab. *clara* ♂. Type.
 Fig. 7. *Anarta melanopa* ab. *striata* ♀. Type.
 Fig. 8. *Hadena bombycina* ab. *confluens* ♀. Type.
 Fig. 9. *Anepia irregularis* ab. *alboradiata* ♂. Type.
 Fig. 10. *Orthosia gothica* ab. *albescens* ♂. Type.
 Fig. 11. *Orthosia stabilis* ab. *marginata* ♂. Type.
 Fig. 12. *Orthosia stabilis* ab. *cruda* ♀. Type.
 Fig. 13. *Orthosia populeti* ab. *diffusa* ♂. Type.
 Fig. 14. *Orthosia munda* ab. *albescens* ♂. Type.

Type ♂: Perthshire, 1899, William Reid. (H. B. Williams coll.) Cockayne coll.

Allotype ♀: Rannoch, 22.v.1928, E. A. Cockayne.

The ground colour of the allotype is darker grey, that of the type being very pale.

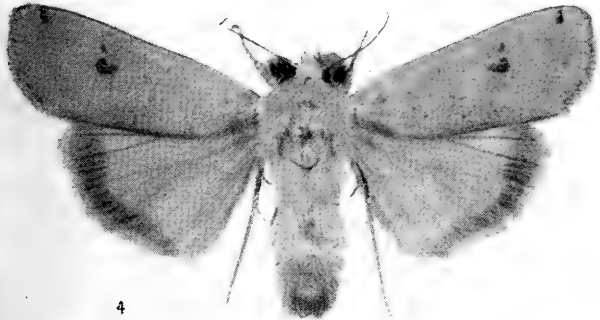
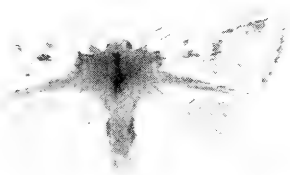
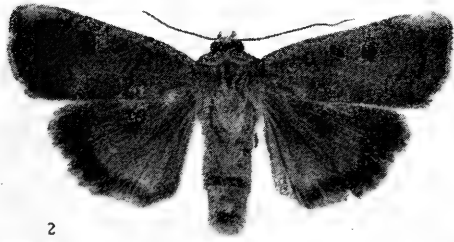
Anarta melanopa Thunberg ab. **pura** ab. nov.

Forewing—the antemedian and postmedian lines are distinct and the subterminal line is present, but the median shade is absent so that the dark reniform and orbicular stand out clearly in the grey median area.

Type ♀: Rannoch, 23.v.1928, E. A. Cockayne.

Anarta melanopa Thunberg ab. **striata** ab. nov. (Fig. 7).

Three broad dark lines run across the middle of the forewing, the first just proximal to the orbicular, the second through the orbicular, and the third and outermost through the reniform. The second and third appear to be median and postmedian lines shifted towards the base. The subterminal line is distinct and from it three dark streaks



run inwards to the postmedian, one on the costa, one between nervures 4 and 6, and one along nervure 2 and the space between 2 and 3; the last two are wedge-shaped.

Type ♀ : Rannoch, 1906, Esson.

Barathra brassicae Linnaeus ab. **diffluens** ab. nov.

Forewing—the basal line is present, but all the other transverse markings are absent; the stigmata and the pale submarginal line are normal. Hindwing—normal.

Type ♂ : Tring, Herts., bred 12.vi.1940 by A. L. Goodson. Cockayne coll.

Hadena bombycina Hufnagel ab. **confluens** ab. nov. (Fig. 8).

The orbicular and reniform are united to form one large compound stigma; the forewing is shorter and broader than usual.

Type ♀ : Teesdale, bred vi.1896. (Vipan coll.) Cockayne coll.

Hadena bicruris Hufnagel ab. **ochreofusa** ab. nov.

Ground colour lighter brown than usual; the pale markings round the stigmata and all those in the distal half of the forewing are increased in width especially the submarginal line; fringes largely ochreous, a few pale brown streaks being present opposite the interneural spaces of the anterior half of the wing and more definite dark lines opposite those nearer to the anal angle. Thorax, abdomen, and hindwings paler than usual.

Type ♀ : Bexley, bred vi.1914 by L. W. Newman. (Bright coll.) Rothschild coll.

Hadena lepida Esper ab. **aurantia** ab. nov.

Ground colour orange almost without markings; even the stigmata are almost invisible. Along the termen there is a row of black wedge-shaped dots and just outside them in the inner half of the fringe there is a row of orange-brown crescents. Hindwing—ochreous with a faint submarginal band.

Type ♂ : Hants., 30.v.1950, H. S. and P. J. Robinson, no. 2866. B.M., 1951, 3.

Anepia irregularis Hufnagel ab. **alboradiata** ab. nov. (Fig. 9).

Forewing—the orbicular stigma runs basad to the basal line but is cut across by the antemedian line, and is joined to the reniform by a white line just in front of the median nervure; all the nervures are white and 2, 3, and 4 run right through the unusually dark subterminal line. Hindwing—the border is darker than usual and there is a whiter wedge-shaped area between 3 and 4 running inwards from it.

Type ♂ : Tuddenham, 1913, H. Thornhill. (B. W. Adkin coll.) Cockayne coll.

Orthosia gothica Linnaeus ab. **nigrilinea** ab. nov.

Forewing—the postmedian line is black and clearly defined and from it black scales run outwards along the nervures; the pale ground colour inside the subterminal line makes the darkened nervures unusually distinct, the antemedian line is also black and clearly defined.

Type ♂ : Aviemore, Inverness-shire, iv.1932, B. H. Armstrong. Cockayne coll.

Orthosia gothica Linnaeus ab. **albescens** ab. nov. (Fig. 10).

Forewing—ground colour whitish with a faint fawn tint; all the markings pale fawn colour. Hindwing—whitish tinged with greyish fawn. Head, including antennae, thorax, and abdomen pale fawn.

Type ♂ : Loch Laggan, 1896, T. Salvage. Banks coll.

Orthosia gothica Linnaeus ab. **albomarginata** ab. nov.

Forewing—from the subterminal line to the termen the ground colour is almost white through which slightly darkened nervures run; the crescentic marginal interneural dots are present. Hindwing—the border is nearly white between nervures 2 and 3, and only a little darker in the preceding and following interneural space.

Type ♂ : Rannoch, iv.1909. R. Adkin coll.

Orthosia stabilis Schiffermüller ab. **albescens** ab. nov.

Forewing—whitish with a slight brown tinge, head and thorax of the same colour; the markings are just visible in a slightly darker shade of the same colour. Hindwing and abdomen are whitish grey.

Type ♂ : Watergate, Emsworth, Hants., 9.iv.1892, W. M. Christy. Christy coll.

Orthosia stabilis Schiffermüller ab. **marginata** ab. nov. (Fig. 11).

Forewing—dark brown with the area between the pale submarginal line and the termen pale greyish-brown with whitish nervures running through it.

Type ♂ : Loc. incog., bred 1886, St. John. (Willoughby Ellis coll.) Cockayne coll.

Orthosia stabilis Schiffermüller ab. **cruda** ab. nov. (Fig. 12).

On the forewing the basal, antemedian, and postmedian lines are blackened and show very distinctly; the median shade is not pronounced; the subterminal line is normal.

Type ♀ : New Forest, iv.1894. R. Adkin coll.

Orthosia cruda Schiffermüller ab. **marginata** ab. nov.

Forewing: the area from the submarginal line to the termen is whitish with a slight sprinkling of brown scales.

Type ♀ : Godinton, 15.iii.1893. Rothschild coll.

Orthosia populeti Fabricius ab. **diffusa** ab. nov. (Fig. 13).

All the usual markings are very indistinct, there is no median shade, the subterminal line is scarcely visible, and the usual dots, reddish or black, are absent; the stigmata are darker than the ground colour surrounding them, but lack the usual pale ring round them; there is a narrow pale marginal line.

Type ♂ : Chiddingfold, 14.iv.1934, E. A. Cockayne. Cockayne coll.

Orthosia munda Schiffermüller ab. **renilinea** ab. nov.

There is a narrow wedge-shaped streak of dark scales running from the lower end of the reniform almost as far as the antemedian row of dots.

Type ♂ : Longtown, Cumberland, bred 1917-1918 by J. F. Johnstone. Cockayne coll.

Orthosia munda Schiffermüller ab. **albescens** ab. nov. (Fig. 14).

All parts of the moth are whitish with a slight tinge of rufous, the usual markings are present in a slightly darker shade of the same colour. This is an albinistic form.

Type ♂ : Chislehurst, Kent, 1902. Cockayne coll.

Orthosia incerta Hufnagel ab. **pluriguttata** ab. nov.

The ground colour of the forewings is very pale and is heavily sprinkled with dark striae.

Type ♀ : Kingston, v.1907. (Bright coll.) Rothschild coll.

Orthosia incerta Hufnagel ab. **postalbida** ab. nov.

The ground colour of the forewing is nearly black. The hindwing is whitish lightly powdered with dark scales; there is a dark discoidal spot and a dark border; fringes white. Superficially it is more like *O. gracilis* than *O. incerta*.

Type ♂ : Panton, Lincs. (Bright coll.) Rothschild coll.

On Pupal Activity

By P. B. M. ALLAN.

In May 1951 Mr. E. P. WILTSHIRE gave me two pupae of *Celerio euphorbiae* Linn. which he had brought with him from Persia. They were a male and a female. I placed them in a small pupa-cage which I keep in my sittingroom.

The male moth emerged on 5th August. I kept it alive for three days, hoping that the female would hatch in time to provide a pairing and, subsequently, eggs. For although there is no spurge in my garden Lhomme (*Cat. des Léop. de France et de Belgique*, 1923-35, p. 359, quoting Berthelin and de Vézannes) asserts that the larva "mange en captivité des feuilles de vigne et même de jeunes grappes de raisons," and a vine which yields yellow grapes grows in the conservatory of a nearby friend.

But it was not to be. The days passed and my female *euphorbiae* remained in her pupa-case. I switched on an electric radiator till the thermometer beside the pupa-cage registered 75 degrees Fahrenheit and arranged a 150-watt electric globe close to the pupa, hoping to hear, presently, that gentle *crack* of the dry case which portends immediate eclosion. All in vain. The days passed and no moth appeared. I wrote to my friend to say that the female *euphorbiae* was evidently lying over until next year, as all pupae will at times.

Then, in the second week of August the pupa began to get lively. Every evening as I sat reading beside my pupa-cage I could hear my chrysalis moving about. It jerked its abdominal somites sharply, now to the left, now to the right; it turned over on to its back, it rolled over on to its face; it shifted its position all over the floor of the cage. Every evening for nine days it was on the move. Once or twice I touched it and every time I did so it twitched. It was a very lively pupa indeed.

On the evening of 20th August there was silence in the pupa-cage. I looked at the pupa at eight o'clock and every hour thereafter until 2 a.m. Not a movement. And in the morning it was in exactly the

same position as it had been in the night before. This, I thought, was the end: my female *C. euphorbiae* had died in the pupa-case as, all too often, choice things do.

Next evening I placed the pupa in my palm to examine it with a lens. The first thing I noticed was that the colour of the moth's wings was visible through the case. Then I saw that the pupa had a sodden appearance, as though the case contained fluid. It looked in fact a very unhealthy pupa. Gently I squeezed it. No movement in reply. I pressed the abdominal somites to one side. They stayed where I had put them. I moved them to the other side. They stayed there. Not the slightest sign of life was present.

Still hoping against hope I placed it in a cardboard box in the warmest part of the room. But when I looked into the box late that night the pupa was exactly where I had put it some hours before. There was no doubt it was dead. I put the lid on the box and during the succeeding days forgot about it.

On the 29th August, at 4 p.m., while reading, I heard a scratching noise which was continued until I got up from my chair to investigate. I looked everywhere except in the cardboard box until it seemed that this was the source of the noise. So I opened the box, whereupon a female *C. euphorbiae* climbed out of it on to my sleeve. It was indeed a beautiful insect: long graceful snow-white legs, antennae white above and olive beneath, abdomen beautifully barred with olive and white and black, her little wings portraying the pattern in miniature. She was very restless and crawled about actively for eight minutes, when she came to rest and at once started to pulsate. An hour later her wings were fully developed.

What is the reason for this pupal activity which takes place with so many species a week and more before eclosion? And why was this pupa to all intents and purposes dead for nine days before the moth emerged? Why should a developing pupa 'kick' in a lively fashion if touched whereas the same pupa with a fully developed moth inside it should behave quite differently only a week or more later? The same predator may be encountered at both periods, and a pupa looks like a pupa whether the moth inside it is developed or not.

It is possible—indeed I am going to suggest it is probable—that the reason for both activity and quiescence is not a physiological one but a biopsychological one. Lloyd Morgan held that "there are no affairs of the body which are not also affairs of the mind" and I have elsewhere expressed my belief that *life* is neither more nor less than the mental element of protoplasm. Bierens called mind in the 'lower' animals "mental life"; but I dislike this expression since I hold that *life* is mental and that therefore "mental life" is a tautology. If Lloyd Morgan was right—and who would be bold enough (and foolish enough) to say that he was wrong?—mind no less than body must be subject to embryological development. Hence it follows logically that the development of mind must be synchronous with the development of body.

So in order to examine this matter of pupal behaviour it is necessary to say something first of all about the development of the pupa itself; for I allege that it is the history of the insect which is responsible for its pupal activity and subsequent quiescence.

Pupation of course is neither more nor less than a moult. It is the last larval moult, and ecdysis takes place just as it did in each of the larva's previous instars. But the form which the insect presents after this last moult is so different from that of any of its previous instars that plainly there has been a 'jump' in the process of embryological development: several stages which formerly intervened must have been left out. Indeed only persons having some acquaintance with natural history would know that there was any connection between a caterpillar and a chrysalis. The insect has suddenly developed wings and long legs and antennae, albeit these are 'soldered down'. Its structures are altogether different from those of the larva.

Hand some young friend a pupa immediately after the larval skin has been shed and point out to him the antennae, wings and legs. He will naturally jump to the conclusion that these appendages are those of the imago. All that is required now is for the insect to lie inert so that these structures may 'grow' and harden . . .

That of course is far from the truth. What your young friend is looking at are the *pupal* appendages; the appendages of the imago may not even begin to develop for several months. The pupa can be dissected out of the skin of a mature larva some hours before the occurrence of normal pupation and if you do this you will find that the pupal appendages are not 'soldered down' but stand out freely as evident legs, wings, etc. Nor are these visible pupal appendages mere cases for the corresponding parts of the imago; the latter are contained within them for only a very small proportion of the whole pupal period; the pupal appendages have become modified so that the organs of the imago can, later, be contained within them; but the pupal organs are not identical, in form nor structure, with those of the imago.

If your young friend examines the pupa of a female Emperor Moth he will see that the pupal antennae are quite broad and feathered as in the male; whereas the antennae of the female moth when it emerges are small and thread-like. So it is plain that at some remote period in the ancestry of this species the females had large pectinated antennae even as the males and that only the pupa retains this form of female antenna. The pupal proboscis of the Death's-head Hawkmoth is about 40 mm. long; that of the imago measures but 14 mm. or 15 mm. Another proof that the pupa is a definite ancestral form is to be found in those species (Geometers) of which the females have only the vestiges of wings. The pupal wings of these females are almost as large as those of the males.

The pupa therefore presents us with a picture of the imago as it was at some long past age. At that remote period the pupal appendages—legs, wings, antennae—were freely moveable; moreover, the fact that the pupa has the scars of external generative organs shows that it was once capable of reproduction.

Why have the 'lost stages' been suppressed? Probably because when change of function necessitated the continuation of embryological development it was found that quiescence in the pupal stage made possible the breaking down and reconstitution of tissue to form the imago, in a single stadium. Plainly it would be of great importance to the imago if it could adapt itself to its environment without the need of introducing the necessary modifications gradually through a number of previous stadia. So the long developmental span between larva and

imago was abridged by eliminating certain intervening stages. Thus to-day we find that while the external characters of the ancestral imaginal stage persist, beneath the surface there is both a gradual transition from pupal to imaginal structures and a breaking down of pupal tissues in order that the 'germs' of the imago's organs (present throughout all the previous instars) may develop into the structures of the present imago.

Bearing in mind, then, the fact that the pupa is an ancestral form of the imago, and my logical claim (prompted by Lloyd Morgan's ruling that "there are no affairs of the body which are not also affairs of the mind") that mind develops concurrently with body, it follows that any manifestation of mind in the pupal stage must be interpreted in terms of the pupa's ancestral condition.

(That sentence is so important to my argument that if you have not got it quite clearly please read it again.)

I therefore hold that the onset of activity in the pupa denotes that the pupa has reached *the climax of its ancestral development*. It is now, *mutatis mutandis*, at exactly the same instant as the butterfly which cracks its pupa-case and crawls out on to a stem. At this moment, aeons ago, the insect could crawl about, doubtless very actively. So its *mind*, at this critical moment, has reached that stage of development when it is in concord with the needs of an actively moving insect.

For a week or ten days—less in some species, more in others—this mental state continues. And *then*—quiescence is resumed because yet another stage of embryological development has been reached, leading to the formation of the imago as we know it to-day. Activity would be suicidal now, for whereas the ancestral perfect insect (as prefigured by the present pupa) could run rapidly and crawl under cover, not so the present imago which relies upon its wings for escape. Until those wings are expanded the insect is vulnerable indeed; until actually out of the pupa-case it cannot avoid a predator. Therefore while in the pupa-case its only hope of safety lies in simulating an inanimate object.

That, at least, is the suggestion which I put forward for your consideration.

Pupating Sites

By DAVID WRIGHT.

One soaking wet night five years ago a *Cerura vinula* larva, one of twenty I was rearing, showed signs of being ready to cocoon and, having forgotten to provide a suitable piece of wood for the purpose, the only thing I could offer it was an old 5½" setting board. I cut an extra groove each side of the existing one and stood it upright in the cage with the larvae.

The next morning there was a nearly complete cocoon in one of the grooves and during the next week the remaining nineteen larvae cocooned in the same way. Seventeen of the moths emerged the following year and three went over for two years.

I cut away the raised parts of the empty cocoons, leaving untouched the hollowed-out parts, and each year until 1951 my *vinula* larvae cocooned on this setting board, frequently using the depressions made by their predecessors.

1951 I had no *vinula* to rear and did not cut away the tops of the empty cocoons, but they came in useful again, this time as cocooning sites for *Apatele alni*.

I had six *alni* larvae and when they were full grown I put this old setting board in their cage. I watched them wander over the board until each found one of the exit-holes left by the emerging Puss Moths and in they went. Although I have not opened any of the cocoons I assume that all is well within.

I decided to extend this idea, and gave an empty *Laotoë populi* pupa case with some moss to a full grown *Allophyes oxyacanthae* larva and it pupated in the old pupa case. Among other species that have used old Hawk Moth pupae in which to undergo their own pupation are *Xylocampa areola*, *Phlogophora meticulosa* and *Selenia bilunaria*.

Out of 95 *Stauropus fagi* eggs in 1951, 89 larvae reached maturity and I gave them dried curled-up Beech leaves in which to cocoon, but every one chose to do so between the fresh leaves of their food, in most cases quite high up in their cages. Mildew soon appears on these green-leaf cocoons and they should be kept in well ventilated tins, but not allowed to become too dry.

Drymonia ruficornis pupates well in nearly dry earth about 1" deep. The cocoons are fairly strong and can be removed after a few weeks.

The pupating habits of *Eumichtis lichenea* are rather puzzling. It is a common species in Abersoch, N. Wales, and, although I found many larvae and bred them successfully from eggs, I could not discover for certain the type of site it normally chooses for pupation. Those I bred pupated in a cocoon in sand or sandy earth, but it was common to find full grown larvae crawling up the walls of the house and even indoors, evidently looking for a place in which to pupate. Twice I found newly emerged moths in upstairs rooms.

Notes on Rearing *Herse convolvuli* L.

By D. G. SEVASTOPULO, F.R.E.S.

I can add a few remarks to Mr. Philpott's paper under the above heading (1951, *Entomologist's Record*, 63: 235). During twenty-seven years' residence in India and East Africa, I have only come across two green adult larvae of this species. One was found in Calcutta before I had started recording descriptions of the larvae that passed through my hands, and the other was reared in Kampala from a larva found in the 3rd instar. I have never searched seriously for larvae of this species, either in India or East Africa, but casual searching of *Convolvulus* has never produced anything larger than a 3rd instar larva.

My experience also is that the dark form of larva can be differentiated in the 3rd instar. The larvae then begin to develop a broken purple subdorsal stripe and a lateral series of oblique purple stripes. These stripes vary both in width and intensity of colour, the ground colour remaining green. In the 4th instar the stripes are even more developed, although the ground is still green, and in the 5th (final) instar the larva becomes some shade of brown.

The horn of my two green larvae was orange-yellow with a black tip. and the horn of all my dark larvae has been black in the final instar.

All my dark Indian larvae had the spiracles black, but the paler of the brown forms in Uganda often have them red-brown with the central slit black. The green Kampala larva had the spiracles black, with a narrow orange rim, and they were set in black spots.

Bell & Scott give fairly detailed descriptions and figure several forms of Indian larvae in the *Fauna of British India, Moths*, v (Sphingidae). They describe the dark form as having the horn and spiracles black, whilst the green form is described as having the horn orange with the tip black and the spiracles orange-red edged narrowly with dark green.

The darkening of the newly-hatched larva's horn from a pinkish colour to black is of fairly frequent occurrence in the Sphingidae. In many species, also, a similar change of colour occurs after each moult.

So far as I am aware, the cause of dimorphism in Sphingid larvae has not been discovered. Suggestions have been put forward that it is the result of response to environment, larvae that rest on or under the soil producing the dark forms, whilst those that remain on the food-plant produce the green. I do not think this is the correct explanation, however. The larvae of the Choerocampinae fall naturally into three groups, species that are always dark, species that are always green, and species that are dimorphic. One of the species always producing a dark larva is *Theretra oldenlandiae* F.; the larva turns black after the first moult, and appears always to rest on the food-plant.

My own opinion is that the dark forms are the result of increased activity, which in some way alters the composition of the pigment. This explanation would, I think, account for the fact that larvae kept in an overcrowded state, and which would indulge in more movement from mutual interference, tend to produce a high proportion of dark forms, whilst larvae that wander from their food-plant to rest on or under the soil by day would also produce dark forms. Larvae reared in isolation and larvae which did not wander from the food-plant would, on the other hand, remain green.

Possibly, also, some genetic factor is involved. It may be that only larvae that are heterozygous for the dark and green genes have the power of producing either a dark or a green larva.

It is a fascinating problem, but one that would require much time and ingenuity to work out. Breeding Sphingids in large numbers is not an easy matter as they consume such vast quantities of food. Mr. Philpott's sixty odd *convolvuli* got through a bushel of the food-plant a day, and with the increased rate of growth in hot countries this figure would, presumably, be exceeded.

Kampala, 23.xii.51.

Some Notes on Breeding *Dasychira fascelina* L.

By H. SYMES, M.A.

In the December number of the *Record* last year (63: 278) Mr. K. C. Greenwood appealed for information to anyone who had succeeded in rearing *Dasychira fascelina* L. from the egg. Well, I have twice bred a small series of fine specimens, so my experiences may be of interest, and, I hope, of practical value.

On 17th July 1945 I was taken by the Rev. F. M. B. Carr to a locality at Ashley Heath, near Ringwood, Hampshire, where he had discovered some *D. fascelina* a few days before. We found eleven females, all more or less worn specimens, resting on top of the heather. I took a few of these and obtained two batches of eggs, which began to hatch on 28th July. I kept the larvae for some weeks in metal boxes and fed them on sallow. When they were large enough to be moved to a cage I transferred them to a couple of celluloid cylinders. About the end of September the larvae ceased feeding and collected round the tops of the cylinders, protecting themselves by spinning a flimsy web. I was living in an hotel at the time and kept the cages through the winter on the window-sill of a cold bedroom near a window that was open day and night: it faced east, and the cages were placed so as to receive only the earliest morning sunshine. A third batch of larvae was sleeved out on a promising sallow bush in the grounds: all went well until February, when the sallow, sleeve and all, was destroyed by the tidying zeal of casual labour in the garden.

I have no record of the number of larvae that went into hibernation, but, speaking from memory, I think there were about three dozen in the larger cylinder and two dozen in the smaller. Of all these, about 24 survived the winter.

At the earliest possible moment—the date was 24th February—I started offering them food, which they accepted without hesitation. There is a species of *Prunus* (*P. cerasifera*, I believe) which is sometimes to be found growing in garden hedges, and in the south of England it has the admirable habit of breaking out into leaf very early in the year, in sheltered localities. I found it most useful in feeding hibernated larvae, such as *Gastropacha quercifolia*, *Panaxia dominula*, and *Triphaena fimbriata*, and this was what I gave my *D. fascelina*. In this connection, if *P. cerasifera* is not procurable the purple *P. pissardii* is not to be despised. When the sallows came into leaf I added this to the diet, and the larvae fed up rapidly and were full-grown a month or six weeks earlier than wild ones. Seventeen moths emerged, the earliest on 2nd June, the latest on 26th June 1946. They were all very fine large specimens: the two biggest females had a wing expanse of 56 mm. and the smallest an expanse of 54 mm., compared with the 51 mm. and 50 mm. of the two wild parents. The bred males had an average wing expanse of 46 mm.

The second time I bred this species was in 1949-50. I found a female on a heath near Wareham, Dorset, on 25th July 1949: it was such a small specimen that I thought it was a male until it laid some eggs, its wing expanse being only 45 mm. I treated the larvae in their early stages in the same way as my 1945 brood, but when the time approached for them to stop feeding I sleeved about two dozen of them on a birch tree in my garden and left them alone for the winter.

I examined the sleeve on 18th February 1950 and found that nearly all the larvae were alive but showed no signs of activity. There was a short cold spell at the end of the month, but early in March the weather became very mild. I brought the larvae indoors and started feeding them on *Prunus* as before. They fed up rapidly, but there were some unexpected casualties when they were in their last skin. However, twelve moths emerged, the first on 5th June and the last on 23rd June. They were fine specimens, almost as large as those I had bred from

Ashley Heath parents. The largest female had a wing expanse of 54 mm. and the males averaged 44 mm. as compared with the 45 mm. of their parent.

I have referred in some detail to the size of my bred specimens because I think it was due partly to bringing them indoors and giving them food as early as possible after hibernation, and partly to the fact that *Prunus* and sallow are far more nutritious than heather, on which the Wareham parents must certainly, and the Ashley Heath parents probably, have fed.

The late Mr. C. Rippon, a most successful rearer of larvae, told me that to get fine specimens from spring-feeding larvae it was essential to keep them in an even temperature, protected from any sudden fall such as is only too frequent in an English spring. A low temperature has a bad effect on a larva's appetite and it never recovers the ground it has lost. I have always tried to follow his advice, and this has paid some handsome dividends.

Collecting in the Isle of Man

By Colonel S. H. KERSHAW.

From October 1940 to February 1943 I was Chief Instructor of an O.C.T.U. in Douglas, Isle of Man, and one of my chief duties was to get the permission of landowners and farmers for our cadets to use their land for schemes and exercises. I got to know well almost every tenant south of the road from Douglas to Peel and many to the north of it. I was given the greatest courtesy and help everywhere, and we never had the permission to use land for training withdrawn in a single instance. I thus had unrivalled opportunities of studying localities and was helped by several keen cadets who reported anything interesting, so that I could slip out and make a further reconnaissance after working hours. If anyone is tempted by this article to spend a holiday in Manxland may I stress the great importance of contacting the owner of land on which he intends to collect and getting permission before he wanders off the many footpaths. Permission is readily given, but woe betide the collector who fails in this simple courtesy.

The island contains many interesting moths besides its speciality, *Hadena caesia* Schiff., and although the number of butterfly species is small, there is always the chance of a first-class 'var.'

For the first ten days after our arrival a thick sea mist hid even Douglas Head from our billets and decided the butterflies to go into winter quarters, but on a sunny day early in March 1941 I took a very nice var. of *Aglais urticae*, with dead white replacing all the yellow and a large part of the red on all four wings. The insect was very noticeable when on the wing; but would it settle for more than half a second? Not on your life! It took half an hour to net. This was at a sharp turn in the steep lane leading from the Nunnery towards Douglas Head.

Our next piece of luck was the capture of a deep sulphur-coloured *Pieris rapae* at Langness by a cadet of the Royal Air Regiment, (then) P.O. Winnell. I hope he got through safely and still has that insect.

A remark of a Manx collector, Mr. Will Cowin, that the race of *Anthocaris cardamines* near Ballaugh was often yellow (later on he ex-

plained that he was referring to the white areas which are often covered with yellow scales like the Irish type) sent me off to the Ballaugh Curraghs on the first fine whole holiday in May. Speaking from memory it was the 16th. I was looking for the primrose-tipped male var., and I netted two in the lane winding through the Curraghs; next I got an intermediate, and then—the Museum Piece! A female which had taken the male colour for the wing-tips but had chosen primrose instead of orange. Three days later I went there with a friend, Mr. Hedges of Ballavale, and he had the luck to take two more primrose-tips, both males; I got a second intermediate. After I left the island I learnt that two more male vars. were taken in 1946, so it is still there. This *A. cardamines* race laid its eggs almost entirely on the pink cuckoo-flower (*Cardamine pratensis* L.). The larvae did not seem to be cannibals, perhaps because of the abundance of the foodplant.

In 1942 *A. cardamines* spread all over the island, as *Celastrina argiolus* did last year; I met it on the Douglas esplanade and one Sunday, when the trains do not run, I followed the Douglas-Peel railway line as far as Crossby and Glenvine looking for more colonies. I found several, and at a sharp bend in the railway I found a colony of *P. megera* in which several of the females had the median lines filled in with black, and took a couple of them.

Later on, in August, I followed the lane leading off the Laxey-Ballaugh road right through the marsh and found my way to Ballaugh Station. Thereafter I always used this means of entering the Curraghs and it was lucky that I did so as I here came across a colony of *Pararge megera* which was prolific in extra-spotted forewings, and one lucky day I picked up a perfect gynandromorph *Polyommatus icarus*, left half female, the rest male, making a nice pair with one which my brother (G.B.K.) caught in North Wales. The road to the Curraghs passes Ballaugh church and leaves the main road north at the first turn beyond the churchyard, winding eastward to the north end of the Curraghs. The colony of *P. icarus* was at a two-lane meeting, about half-way to the Curraghs.

For *Argynnis aglvia* I found the best spots were in the Sulby Glen near and below the Rest House at the foot of the Tholt-y-Will hairpin bend, at the waterfall some distance from and on the opposite side of the road to the Rest House, and on the sea coast between Port Soderick and Castletown.

C. argiolus had disappeared from the Isle of Man list for some fifty years until I reported it as occurring in small numbers on the Laxey slopes of Snae Fell. *Argynnis euphrosyne* has similarly been absent for much the same period but might be found at any time in its old locality at Maughold Head. I do not think *Argynnis selene* has ever been reported, and the same is true of *Argynnis paphia* and *Argynnis cydippe*.

I found a few *Maniola tithonus* south-west of Peel and on the sea margin near Cas-y-Hawn; *Apatura iris* has been recorded, and an old friend of mine, Mr. G. Clementson, saw a *Nymphalis antiopa* flying on the railway line near Greeba. *P. icarus* has colonies all round the coast, but I never saw *Aricia agestis*. *Coenonympha pamphilus* is plentiful and addicted to double-spotting. I saw one *Gonepteryx rhamni* flying near Port St. Mary, but it must have been a 'come-over'—to use a Manx phrase—as there is no buckthorn in the island.

In 1943, after I had left the island, some friends of mine were lucky enough to watch a large immigration of *Vanessa atalanta* coming in over Rue Point for twenty minutes; they spread all over the island, being reported from the Calf of Man and produced a very large autumn brood. A few *Vanessa cardui*—it is not common ever—came with the *atalanta*.

Langness is a good spot for *Colias croceus* and an occasional *C. hyale*, and the thistles there serve as a foodplant for *V. cardui*. It is a good bird locality too.

P. icarus and *L. phlaeas* occur in small quantities all over the island, and one colony at the southern tip facing the Calf of Man is worth watching for Irish-type females of *P. icarus*, whilst the mayweed just above sea-level in the numerous ravine-like coves here will produce the larva of *Cucullia chamomillae*. In May-June the sea campion (*Silene maritima* L.), if searched about 8.0 a.m., will yield full-grown larvae of the dark Manx form, *capsophila*, of *Hadena lepida*; as the sun gets hot they retire under thick vegetation or into the soil.

A friend was on the top of South Barrule one day watching half a dozen *Nymphalis io* flying round and round the topmost pinnacle; they circled the same rock for ten minutes, and my friend concluded that five males were pursuing a female. To prove his theory he netted the leader—a male! The others continued their circling and in turn he netted five leaders—all males. The female was at the tail of the procession! Had they all got dizzy and the female overtaken the rear-most without the males noticing?

The flat wind-swept extreme north of the island near Point of Ayr is extremely interesting country; the shore is frequented by terns, gannets, and oyster-catchers, the land covered with diminutive heather, broom, gorse and the wild white rose, all dwarfed and rounded into an uneven carpet of springy growth. It is not very attractive to butterflies, possibly because of the fierce winds which sweep the area and stunt all plants.

I never took *Pararge aegeria* in the island but believe there are some in the Manx Museum in Douglas.

The high coastal ridge running S.W. from Peel is worth working for insects and flowers, but the whole island is well worth study as within five years two Diptera new to the British Isles have been discovered and there may be other undiscovered insects as well. One of these Diptera was new to science and one was feeding on a Central European *Eupithecia*! If the 'Pug' turned out to feed on a hitherto unknown plant Mr. Will Cowin would have brought off a pretty treble.

For bird lovers there are raven, chough, peregrine and many kinds of duck and petrels. Port St. Mary is probably the best centre for bird-watching, Peel and Douglas for butterflies, and Douglas for moths. The authorities at the Manx Museum are always sympathetic and helpful, although my old friend the curator, Mr. Curphey, is no more. We spent many early mornings searching for *Hadena caesia* larvae on the cliffs of Buchan Head but without much success; our bag was nearly all *H. capsophila*.

Note: In Mona's Isle "Ballaug" is pronounced "Ballarf" and "Maughold" is "Mackeld."

Butterflies Seen on a Visit to Ireland in August 1951

By A. M. R. HERON, M.B.

During the last three weeks in August 1951 I toured round a good part of Northern Ireland and Eire, but the weather was unfavourable for butterflies. In spite of this I saw eighteen varieties.

In Co. Fermanagh near Enniskillen I saw a yellow variety of *Pieris napi* but failed to catch it as it disappeared over the inevitable high hedge.

The next opportunity to observe butterflies came on the following day (15th August) at lunch time near Ballysadare, Co. Sligo. I was on the look-out for *Leptidea sinapis*, which I always fail to find. As usual it did not appear, but I noted a few *Pararge aegeria* and *Aphantopus hyperantus*. *Nymphalis io* was plentiful here as in most of the West and South of Ireland. They seem to become more numerous, as I have noted them in nearly all the localities in which I have collected this year, both in Ireland and England, from Witherslack to the Broads. In contrast with this I have failed to note one *Pyrameis atalanta* in either country this last season.

We had just started after lunch near Ballysadare when *Argynnis paphia* put in its appearance near a wood. On stopping I was able to catch a few, but they were all rather ragged as they are wont to be. I later noted this butterfly in many of the woods in Co. Cork and Co. Kerry, especially near Lough Curragh, Killarney and Glengariff.

I have already written of my visit to the Burren of Clare where I found *Eumenis semele* to be plentiful. I also noted them on many moors and rocky crags, both by the sea and quite high in the mountains about Killarney, Glengariff, the top of the winding Tim Healey Pass and about Waterville.

On 18th August, the day after arriving at Glengariff, we visited a sheltered nook by the sea a few miles to the west and found *Epinephele tithonus* in profusion. I saw them in only one other place near Waterville. On the same day I saw several *Celastrina argiolus* round Bantry Bay. These were also seen about the Lakes of Killarney and Lough Curragh, flitting among the numerous holly trees, and later at Waterville.

A few days later I noted *Pararge megera* near Bantry, Co. Cork, and in the next week near Waterville. In the same places *Pararge aegeria* was seen.

After a week in Glengariff we went on to Waterville and my son and I hunted all the local spots shown in Ford's book for larvae of *Melitaea aurinia*, but without success. On 27th August, when going from Kilorglin to Killarney in search of *Leptidea sinapis*, we came on a field full of scabious and this was covered with the webs of larvae of *Melitaea aurinia*. On the following day we again found them in large numbers on a promontory near Derrynane, Co. Kerry. They were to be found almost down to the shore. I am attempting to bring some of these through the winter under different conditions.

We saw or captured *Gonepteryx rhamni* on our return journey a few miles out of Limerick, towards Nenagh, Co. Tipperary, and later in the day near Monasterevin, Co. Kildare, where I once more failed to find *Leptidea sinapis*,

Owing to the shipping strike I was unable to devote any time to collecting or observing in the Dublin area.

Butterflies in a Hampshire Garden

By PAUL H. HOLLOWAY, F.R.E.S.

A country garden under the shelter of trees, mossy paths winding through the flower-beds, a small pond surrounded by a floral-iridescent sandstone rockery. An old, hollow apple tree in which numerous birds have nested; the shrubbery screening the garden from the north wind, from which many more birds make their vicious onslaught upon my seedlings, and I let them do it, because they repay me with the dawn chorus. I still remember the old oak in the corner which was destroyed by *Cossus cossus*, and at that time the nightly visits of *Amphipyra pyramidea* around the decaying bole, a few *Mormo maura* among them. Near that spot now the Vanessids swarm over the buddleia. To the north, a meadow of Lady's Smock for the spring feast of *Anthocharis cardamines*; to the east a field of ragwort for *Callimorpha jacobaeae* and, beyond, the shelter of extensive woodlands known as "Park Hills" for such lords of the air as *Argynnis paphia* and *Limenitis camilla*. On the south side an orchard and scattered bee-hives, with that parasite of the bees the Honeycomb moth (*Galleria mellonella*) being a source of anxiety to my neighbour.

It pleases me to ruminate on the changing beauty of this garden through the seasons: the vista of sun-drenched apple and pear blossom, the dim scent of stocks creeping through the dusk, *Polychrisia moneta* at the delphiniums at the close of a lovely summer day, the opening of flower after flower and the nightly sojourn of so many moths on the wild eastern bank of nettles and cow-parsley; the ripening fruit and the arrival of *Vanessa atalanta*; the rare aroma of autumn bonfires. In winter, gaunt skeletons of trees against a background of grey skies, and *Aglais urticae* and *Nymphalis io* accepting the hospitality of my house; the song of thrushes giving promise of yet another spring.

I feel honoured that so many species of butterflies should have been attracted by the riches of my garden, twenty-six in all, as the following list indicates:—

Pararge aegeria. A casual appearance throughout each season.

P. megera. Mostly the second brood, especially fond of annual asters.

Melanargia galathea. A very rare visitor from scattered local colonies.

Eumenis semele. One appearance only, in 1942. The nearest known locality is approximately four miles distant.

Maniola tithonus. Quite common; one female ab. *excessa* appeared in 1941.

Maniola jurtina. A frequent visitor from surrounding pasture land.

Coenonympha pamphilus. Not common, preferring the adjacent meadow.

Aphantopus hyperantus. Very rarely, from the "Park Hills" woodlands a few hundred yards distant.

Vanessa atalanta. Loves the juices of autumn fruit and is often seen in numbers.

Vanessa cardui. Sometimes visits the michaelmas daisies.

Aglais urticae. Always common in summer and after hibernation.

Nymphalis io. Seen more frequently after hibernation than in summer.

Polygonia c-album. Plentiful enough in company with *V. atalanta* on fallen fruit, although imagines of the first brood are rarely seen.

Limenitis camilla. A rare but welcome summer visitor from "Park Hills".

Polyommatus icarus. Greatly attracted by lavender bloom.

Celastrina argiolus. Occasionally flying around the trees but never common.

Lycaena phlaeas. Fairly well represented, including the var. *caeruleo-puncta*.

Pieris brassicae. The larvae favour foliage of nasturtium and stock.

Pieris rapae. Always common.

Pieris napi. Not as common as *P. rapae* but a fair number annually.

Anthocharis cardamines. Common every season; males always predominant.

Colias croceus. Pays a frequent visit in suitable seasons, including the ab. *helice*.

Gonepteryx rhamni. More after hibernation than in summer.

Pyrgus malvae. Very rarely seen in the garden.

Thymelicus sylvestris. Not common but always occurs.

Ochlodes venata. Quite common every year.

Many years ago I netted a solitary *Euphydryas aurinia* in my neighbour's garden. From whence it came remained a mystery, no locality being known within several miles.

Every season the arrival of each butterfly is eagerly anticipated, and I hope still to add to my list. Some glorious summer day I may discover the intrusion of some rarity like *Nymphalis antiopa*, or even *Pontia daplidice*. But what a welcome intrusion!

Wind Currents and Flying Insects

By P. SIVITER SMITH.

Recently in these pages there have been a number of notes on the subject of the effect of wind currents on flying insects and stating, correctly in my opinion, that a flying insect could not tell the direction of the air current in which it was flying. Important fundamental principles are involved in this question, as there are in any matter that involves action and motion. The mechanics of insect and bird flight have been very widely misinterpreted for a long period of time and I believe that, as a result, many misleading theories and speculations have been advanced which obscure knowledge instead of advancing it. The problem of insect flight and air currents is closely woven into the problems posed by migration.

It is not particularly easy to convey clearly to a reader the circumstances in which an insect, flying in a wind or air current, is quite unable to tell the direction in which that air current is moving. This is nevertheless true, whether the wind is blowing at 10 miles an hour or 60 miles an hour. We ourselves judge that wind from our position, fixed on the Earth; the wind blows at 60 miles an hour relative to the Earth. If the insect settled on the Earth it could then tell at once the direction of the wind and feel its strength. But when it is airborne it cannot do

so (nor can a bird or airman) unless it could make a comparison by sight which enables it to see the direction in which it is being blown. Normally insects cannot do this unless they are very close to the ground, but even if they could then visually observe their "drift" they cannot judge the strength of the wind by "feel".

An air-borne insect is not conscious of the wind and cannot be conscious of it; the only "draught" it can feel at all is that occasioned by its own motion forwards. The nearest analogy that a human can envisage is in swimming. Imagine that you were able to swim under water for very long periods; then imagine yourself miles out to sea, with nothing in sight and extremely deep water below. Swim well down under the surface and continue this for some time. You will be conscious that you are swimming steadily forwards—you will feel yourself going directly forwards through the water. Yet in fact the tide may be taking you directly backwards far faster than you are swimming forwards; or it may be taking you to the left or to the right, or forwards at twice the speed you are putting up yourself. But you will not be able to tell that there even is a tide running, let alone tell its direction. Just really stop a moment and try and imagine yourself in those conditions; then I believe you will be able to visualise more easily the conditions which determine that an insect is unable to tell the direction of an air current.

Note that I am not now entering into the finer arguments as to whether there are ever conditions in which an insect can in fact be conscious of the wind-direction. I am speaking of the general conditions of an air-borne insect in free flight well above the ground and I am offering an analogy which I think makes the situation easier for a human to grasp.

It must be remembered that we ourselves are in precisely that same situation. We are not conscious of any movement, but not only are we revolving—with the Earth—but we are also travelling round the Sun at a prodigious rate. We can observe this movement by watching the Sun—we move relative to the Sun—but we are not conscious of the movement nor of its direction. As to its speed, we have to be content with the calculations of the astronomers.

Notes on Microlepidoptera

By H. C. HUGGINS.

Myelois cribrella Hub. The stout full-fed larva of this moth can be found commonly in most districts of south-east England in the dead stems of thistles in winter or early spring. I find it commonest of all in *Onopordon*. The stems, as usual, must be kept out of doors till the end of May. *Cribrella* is much commoner than its appearance as a perfect insect on thistle-flowers, or at light, suggests; frequently every plant of *Onopordon* contains half a dozen larvae.

Cateremna terebrella Zinck. The larva of this moth, usually considered local and scarce, should be looked for in the dwarfed rough-edged cones of spruce fir in the late winter and spring. These cones fall in their first year and the scales do not lie smoothly like those of the mature cone. The larva, which is white and transparent, showing the

central vessel clearly through the skin, feeds for two years, most of which are usually spent on the ground. It was my custom when breeding it to select the cones which had been on the ground for a year and were often covered on the underside with white mould; they frequently also had a small whitish-grey toad-stool or two growing on them. The newer brighter dwarfed cones usually contained half-grown larvae which had a year's feeding before them and were difficult to rear. *Terebrellà* is another moth that is probably commoner than it is usually considered to be; it was, I believe, unrecorded for Kent till I turned it up; but I found it abundantly there in the only two old-established spruce groves I visited.

Laspeyresia strobilella Linn. This moth can easily be obtained by collecting the large fallen cones of spruce at the end of the winter. I should say it is found in nearly all spruce groves and is usually abundant and easy to rear, as the larva has only a one-year cycle.

Laspeyresia conicolana Heylaerts. The larva of this species is to be found, often several in one cone, in cones of Scots fir in late winter and early spring. There is usually no outward appearance of infestation, but its presence may be inferred by the examination of old cones, when the emergence holes in these may be detected, or a locality where the moth has been seen flying may be selected. As *conicolana* is usually common where it occurs a random selection of last year's cones in such a place is usually successful.

How many of us to-day use a boot-jack? Practically all entomologists at one time or another use rubber knee-boots and the job of taking these off, if they fit decently, is considerable; also when covered in mud they are a pest to the hands in some lonely place when it is desirable to put on shoes to drive home. My late friend, Mr. W. S. Gilles used to smother the inside of his boots with talc powder, so that they came off easily; but this did not obviate the mud difficulty, besides making his garage smell like a lady's bathroom. A boot-jack in the boot of the car saves all this trouble; there is no need to have the silver-gilt one Rawdon Crawley regretted not ordering when making an inventory of his effects before Waterloo, and anyone can knock up one from two small pieces of plank.

Notes on Life Histories, etc.

When are we going to be told the foodplant of that common, and very lovely, Geometer *Xanthorhoe designata* Hufn.? In confinement it can be reared on several plants of the *Cruciferae*, hence Barrett (*Lep. Br. Is.*, 8: 155) suggested that "it lives on those species of 'cress' which are found in damp woods". But we have netted the moth outside dry open woods on hills and its habitats are so diverse as to indicate a foodplant that grows "everywhere". The *Cruciferae* are not a large family and many of its members are very common plants—Tower Mustard, Thale Cress, Lady's Smock, Hedge Mustard, Flixweed, Garlic Mustard, Treacle Mustard, Shepherd's Purse, Penny Cress: one or more of these is perhaps the foodplant. There are two broods and the larvae are full grown normally in the first week of July and first week of September. Will someone please investigate, in due season, in a place where the imago was netted previously?

We have noticed that the larvae of *Polyplocia ridens* and *Drymonia ruficornis* often occur in the same places. Whenever our diaries record the finding of *P. ridens* larvae in June they almost invariably record *C. ruficornis* as well. Both are easy to find. *Ridens* construct retreats by spinning two oak leaves loosely together, usually at the extremity of an overhanging branch, though sometimes they inhabit the short shoots that spring from the trunk, and in such situations we have found them only three feet from the ground. *Ruficornis* is a lover of shade and therefore favours the north (and open) side of a tree which stands at the northern edge of a wood; but on occasion we have found it on trees facing west and, when in the first instar, also on trunk shoots. Has anybody else noticed this frequent association of the two species?

Orthosia munda is another species which has a preference for trunk shoots. Being a cannibal by nature it should not be put in a cage with other oak-feeding and more desirable species. It is easily identified—brown with a bright orange head. We have noticed that it is partial to 'sugar'.

We need a word to denote the "activating principle" of insects. This double-barrelled expression will not do because the verb 'to activate' is used (*teste* the *Concise Oxford Dictionary*, 1949, Addenda, p. 1447) only by physicists and sewage-farmers. Also it is clumsy. "Life" (defined by the same Dictionary as 'state of ceaseless change'—which incidentally might apply to an inanimate substance such as radium) has too wide a connotation and often contains an element of *time*. "Psyche" conjures up an association with Eros and properly denotes the soul. "Psychic attribute" is as bad as "activating principle". "Instinct" is an omnibus word most often associated with an action. "Mind" has dozens of meanings, and "mental life" is a tautology to the biopsychologist. Perhaps the Latin word "anima", of which the primary meaning is "the breath of life", is most suitable to our purpose.

Notes and Observations

PLUSIA VARIABILIS PILL. & MITT. (ILLUSTRIS FAB.) FROM THE H. HAYNES COLLECTION.—On 28th November 1951, at the sale of the collection of the late Mr. H. Haynes of Salisbury, two males of *Plusia variabilis* P. & M. were sold. In view of the extreme rarity of this species in Great Britain it is I think worth while to give the details such as are on the labels of these two specimens:—(1) Talsarnau, Merioneth, Mrs. A. F. Clarke, 16/8/1892; (2) Salisbury, 1888, W. I. Morgan. Ex Crewe Collection. Neither example has been recorded to my knowledge. If genuine they are of course of exceptional interest, and it would be interesting if this be so, if someone can testify to their authenticity and perhaps give further details of their history.

The recorded history of *P. variabilis* in Great Britain can be quite briefly stated. It was reported to have been taken commonly on Salisbury Plain by Mr. Spratt (Stephens' *Haustellata*, vol. 3), and E. Donovan stated that he took one in South Wales (Haworth's *Lep. Brit.*). All these captures were made prior to 1811. The only other published record I can find is of a specimen which was taken at Castle Kevin, Annamore, Co. Wicklow, by Miss Alice Hull in August 1887 (Kane's *Lep. of Ireland*).—J. M. CHALMERS-HUNT.

[*Plusia variabilis* may be a casual immigrant to this island but it certainly has never bred here, since its known foodplants are *Aconitum lycoctonum*, *A. anthora*, and *Thalictrum aquilegifolium*, none of which is a British plant. The notorious dealer W. Plasted supplied Dr. Leach, J. Sparshall, T. Marshall, E. Shepherd, Dr. Abbott, Spratt, and other contemporary collectors with specimens which he asserted were "taken on Salisbury Plain". One of Dr. Leach's specimens afterwards came into the cabinet of the Rev. Henry Burney, and others doubtless still exist. Plasted was an unmitigated nuisance. He supplied his customers with *Lycaena chryseis*, all alleged to have been "taken in Ashdown Forest", in such abundance that by 1837 a contributor to one of the magazines wrote "It is in every collection of importance, sometimes a whole series . . . to be purchased abundantly of the dealers". Latham, Humphreys, Seaman, Argent, Tucker, Ardley, Jamrach and Askew were others who were flooding English cabinets with Continental specimens at that time, so that a year or two later Edward Newman suggested that *antiopa*, *lathonia*, *podalirius* and *chryseis* should be renamed *askewii*, *jamrachii*, *argentii* and *tuckerii* "in compliment to those distinguished entomologists who supply us with these delicacies on such liberal terms". It is due to Plasted that *Synvaleria oleagina* still occurs in our textbooks, although not a single specimen of this insect has ever been taken in this island.—P.B.M.A.]

EUPITHECIA INTRICATA ZETT. SPP. ARCEUTHATA FRR. IN HANTS.—I have in my collection two specimens of this species, each labelled "New Forest, May 1939, W. H. Jackson".—J. M. CHALMERS-HUNT. 17.xii.51.

EUPITHECIA MILLEFOLIATA RÖSSLER: AN EARLY RECORD.—Recently Mr. D. S. Fletcher of the British Museum, Natural History, kindly identified for me several specimens of the genus *Eupithecia* which I had taken over a number of years. Among them was a large female which had been included in a series of *E. subnotata*. It has turned out to be *E. millefoliata*. The special interest lies in the fact that I took it in the woods at Ham Street, Kent, on 7th August 1933, which is six years before the capture in 1939 by Mr. Austin Richardson of the example from Sandwich which up till now has constituted the first British record of this Pug. It is very likely that further examples lie hidden in collections of even earlier date, thus establishing this species as one of long standing which has been overlooked.—C. G. M. DE WORMS. Three Oaks, Shore's Road, Woking, 5.xii.51.

EARLY APPEARANCE OF ERANNIS LEUCOPHAEARIA SCHIFF.—A specimen of this species appeared at Mr. B. S. Goodban's m.v. light trap at Dunsfold, Surrey, on 21st December 1951—a somewhat premature 'Spring Usher'.—W. E. MINNION, 40 Cannonbury Avenue, Pinner, Middlesex. 31.xii.51.

[We can find no previous record of this species having been taken in December. The earliest date recorded in this magazine is 3rd January.—ED.]

EARLY APPEARANCE OF PANOLIS FLAMMEA SCHIFF.—On 6th January 1952 a newly emerged ♂ *Panolis flammea* Schiff. (*piniperda* Panz.) was taken in the New Forest by my friend Mr. P. W. E. Batstone, who presented me with the living specimen on the following day. It was

found resting on a rhododendron leaf in the vicinity of pines.—PAUL H. HOLLOWAY, Warwick House, Fair Oak, Eastleigh, Hants. 7.i.52.

PROBABLE SECOND BROOD OF *CAMPAEA MARGARITATA* LINN. IN 1951.—At m.v. light at Broad Oak, near Canterbury, Kent, on 21st September 1951, I noted among other species 8 specimens of *Campaea margaritata* L. These consisted of 7 ♂♂ and 1 ♀. I suspect they are second-brood examples, in spite of the fact that they are all rather worn. The alar expanse is considerably less than that of any in my series of June and early July specimens taken this year (1951) and in years gone by, the ♀ being 36 mm., smallest ♂ 30 mm., and largest ♂ 35 mm. Of the June and July examples in my series none measures less than 40 mm. and some females are nearly 50 mm. I have occasionally read of a probable second brood with this species but had not previously had experience of it myself.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 17.xii.51.

EUPISTA ERIGERELLA (FORD): ANOTHER SURREY LOCALITY.—On page 248 of the November (1951) issue of the *Record* there is a note by me of the occurrence of this species at Riddlesdown. These were taken on the 7th October. Later, on 2nd November, I found some larvae at Ranmore. Walking along a by-road to the south of the downs—near the Dorking to Guildford railway line—I saw a fine lot of seedheads of *Erigeron acris* (Blue Fleabane) growing on the slope to the railway side of the road. A careful search of these eventually brought to light one larva (or rather a larval case), and in about half an hour I had found three in all. Apparently it is not common in Surrey, although in Kent it is sometimes locally quite common. The moth is rarely seen wild and would be difficult to recognise even if taken. This, however, applies to many species of the micros. It seems probable that this species will be found to occur in other places along the North Downs, although I have previously searched for it in vain in the Boxhill district.—S. WAKELY, 26 Finsen Road, Ruskin Park, London, S.E.5. 4.i.52.

WERE THEY *MINUCIA LUNARIS* SCHIFF.?—The following appeared in *The Entomologist's Record* in 1894 (5: 217):—"The most startling record of the year thus far, however, is the capture of two larvae of *Catephia alchymista* in Abbot's Wood on July 5th by Mr. H. W. Shephard-Welwyn (misprint for Walwyn). These larvae would undoubtedly have been objects of interest had they been exhibited at one of the London Societies' meetings, but they spun up next day. One would hardly have expected that any resident British entomologist would have been able to identify larvae of *C. alchymista* off-hand and probably the record is erroneous. It would also be well to enquire whether July 5th is at all a likely date for the pupation of larvae of this species." I can find no record that these larvae produced moths, but I think they were much more likely to have been larvae of *Minucia lunaris* than *Catephia alchymista*.—E. A. C.

A NOTE ON BREEDING *PAPILIO MACHAON* L.—On 23rd June I received two female specimens of this fine butterfly from a friend on holiday in the Norfolk Broads. The insects arrived alive, but much the worse for their journey by post, and I had to unwind the proboscis of each with a needle in order to persuade them to begin feeding on honey and sugar

solution. They recovered quickly and I put them on carrot leaves in full sunshine for three days; but no eggs were laid. On 27th June my friend sent me a few sprays of hog's fennel (*Peucedanum palustre*) from the Broads, and within a couple of hours after replacing the carrot with this plant eggs began to appear. I left a stem of carrot leaf with the fennel, but it received no eggs throughout the whole period of laying, which lasted until 1st July, when both insects died. I counted 133 eggs. A number of these failed to hatch. The first larvae appeared on 5th July and I had no trouble in rearing them on garden carrot leaves. The last pupated on 19th August and I now have 94 healthy pupae.—J. NEWTON, 11 Oxleaze Close, Tetbury, Glos. 31.xii.51.

UNUSUAL DATES OF EMERGENCE.—The following late dates may be of interest: *Orgyia antiqua* L. ♂ drying its wings 3rd December; this was on an apple-tree right out in the open away from any shelter; the cocoon was on a thin twig and quite exposed to all weather. Two more *Nycterosea obstipata* Fab. ♂♂ were taken in my light-trap since my last notes (*Ent. Rec.*, 63: 281), one on 10th November and one on the 13th. A ♂ *Caradrina clavipalpis* Scop. in good condition came to my light on 16th December and also a ♂ *Phigalia pedaria* Fab. This last is, I suppose, rather early.—A. J. DEWICK, Curry Farm, Bradwell-on-Sea, Essex. 3.i.52.

[There are a good many records of *P. pedaria* emerging in December; e.g. Barrett (*Lep. Br. Is.*, 7: 137) mentions specimens taken on 14th and 15th of that month. The earliest record we know is 15th November 1948 (see page 20 of last month's issue).—ED.]

PUPATION SITE OF *COSSUS COSSUS* L.—Whilst examining a recently fallen poplar (*Populus nigra* L.) known to be infested with *Cossus cossus* larvae I found several empty cocoons of this species. When the tree was standing one of these cocoons would have been between twenty-five and thirty feet from the ground. I have noted empty pupae cases protruding from trees here on several occasions, but in each instance they have been within five feet of the ground. It would be interesting to know if *C. cossus* often pupates high up or if this was an isolated case.—R. F. BIRCHENOUGH, 8 Ravenswood Crescent, West Wickham, Kent. 6.i.52.

P.D.B. AND MOULD.—On returning to a house from which I had been absent for five years I found in an attic a small glazed cardboard show-case, 12 × 8 × 2. Apparently it was empty, but as I had some recollection of filling it with small butterflies before leaving home I examined it more closely and then found that it was entirely filled, from cork to glass, with a white mould, the filaments of which almost resembled cottonwool. Standing beside the case was a bottle of paradichlorobenzene, and muttering to myself "no harm in trying it" I opened the case and put a lump of p.d.b. in each corner, then replaced the lid and put the case back on the shelf. A couple of months later I chanced to catch sight of this case again and on taking it up saw, to my very great astonishment, that it contained no mould at all but a series of hair-streaks which looked as fresh as though they had been set the previous day. Has anybody had a similar experience? I hesitate to assign such a 'miracle' (as indeed it seemed) to the p.d.b.: the saying *post hoc, ergo propter hoc* springs to mind! But if any reader of these lines ever has

an opportunity to confirm or disprove my 'experiment' I hope he will report in this magazine.—P. B. M. ALLAN.

REPAIRING BROKEN SPECIMENS.—In some recent correspondence with a colleague I had occasion to mention a method of repairing broken specimens which I discovered when a boy. I pass on the method for what it is worth since I do not recall ever having seen it suggested in print, or for that matter hearing of its use by other workers. The method is simply to use ordinary rubber solution such as is employed in the mending of bicycle punctures. This substance has the advantage of a spirit gum in its quickness of drying (it may be assisted to this end by blowing on it) but also has the added quality of leaving the union resilient and thus better able to withstand shocks received in future handling. With practice it soon becomes easy in most instances to use the solution so that it cannot readily be detected. So far the method has withstood the test of time (up to about sixteen years or more). I have also found the solution useful for mounting certain types of specimen—either on card or in life history studies—especially where the specimen is large and has a highly polished surface to which normal gums do not adhere sufficiently firmly to allow much handling. Naturally the method is not suitable for all occasions, and of course some makes of solution are more suitable than others. Those which go red on drying are usually best avoided.—D. K. McE. KEVAN, University of Nottingham. 30.xii.51.

SETTING SPEED.—Some years ago, I kept notes over a fairly lengthy period of the time I spent setting and preparing specimens for the cabinet. I found that on the average, to set, take off the boards and label each specimen took 7 minutes. That was allowing for ordinary good setting, not really special setting, but forelegs out, body supported, etc.; it covers solely the operations of setting, taking off the boards and writing in Indian Ink the label, cutting it out and fixing to the pin. I always assumed I was slow at this work and I imagine most people could average a lot less time. 7 minutes each for a small collection of 5,000 insects, on the basis of a 40 hour working week represents $3\frac{1}{2}$ months of solid work. Just an idle thought!—P. SIVITER SMITH.

[Apparently our correspondent uses setting-boards with 'braces' or transparent paper strips. Setting-blocks, on which the wings are kept in position by winding silk or fine cotton round the block, is *much* the quicker way.—P.B.M.A.]

Collecting Notes

LEPIDOPTERA AT WESTON-SUPER-MARE IN OCTOBER AND NOVEMBER.—In continuation of my Note in *Ent. Rec.* last November (63: 252) it may be of interest to mention that light in my garden during the above months produced very little. In October the nights were dry but cold and in November generally very wet. There were several *Gripopteryx aprilina* in October and a few *Poecillocampa populi* and *Brachionycha sphinx* in November, but otherwise only a few ordinary species. Ivy on the other hand during October and early November was rather more prolific than usual. Several common moths abounded on the blossoms

after dark. Of the better species *Lithophane socia* was commoner than in recent years and there were also a few *Lithophane semibrunnea*. I was glad to see *Xylena vetusta* after an absence of some years.—C. S. H. BLATHWAYT, 27 South Road, Weston-super-Mare, Somerset. 12.xii.51.

LEUCANIA VITELLINA HUB. IN SURREY.—The occurrence of *Leucania vitellina* Hub. in Surrey must be unusual, so it is interesting to record the capture of this insect at ivy blossom on 27th October 1951 at Dunsfold by Mr. B. S. Goodban.—W. E. MINNION, 40 Cannonbury Avenue, Pinner, Middlesex. 31.xii.51.

LITHOPHANE SEMIBRUNNEA HAW. AND THE M.V. LAMP.—With reference to the recent Notes on this species (*Ent. Rec.*, 63: 251, 252, 295, 296) Mr. B. S. Goodban found twelve on one patch of ivy at Dunsfold, Surrey, between 18th and 27th October 1951, while during the same period only one appeared at a m.v. lamp trap some 20 yards away at the other side of a house.—W. E. MINNION, 40 Cannonbury Avenue, Pinner, Middlesex. 31.xii.51.

AUTUMN SPECIES IN KENT.—Insects were so scarce in my neighbourhood this last autumn that there was no temptation to go far afield. *Pararge aegeria* was seen on 5th October here. I spent ten days at Broadstairs in mid-October. We had plenty of sunshine, but only a few Pierids and *A. urticae* were flying. *V. atalanta* was seen once on ivy blossom by day and a few *Phlogophora meticulosa* at night, no other moths. *Orgyia antiqua* ♀ on 17th October. On returning home ivy was past its best and I saw only one *Miselia oxyacanthae* and one *Conistra vaccinii*, no Xanthias. Two *Colias croceus* were seen here in October. Later I saw only two *Colotois pennaria* and two *Erannis defoliaria*, with a few *Oporinia dilutata*, *Operophtera brumata*, and *O. boreata* (*fagata*). A fresh *P. meticulosa* was taken, wings just expanded, on 23rd November. No *Poecilocampa populi* have flown in to light.—G. V. BULL, White Gables, Sandhurst, Kent. 5.i.51.

OCTOBER BUTTERFLIES.—While spending a long week-end in Wales in October the weather was very unsettled, with bright intervals during the days, and cold nights with temperature about freezing point. In spite of this I saw a *Pieris brassicae* and a *Pararge megera* flying on the morning of 23rd October in a sheltered valley behind Colwyn Bay.

Monday, 26th, was very cold and I did not expect to see any more butterflies on the wing. In spite of this, while walking on the Great Orme on 27th the sun came out and the temperature rose considerably. I was not altogether surprised to see *Aglaia urticae* and *Nymphalis io*, but to my amazement one *Eumenis semele* came and settled just beside me. It was of course the special type associated with that region, which is usually earlier on the wing than the larger type. I have previously seen them there quite early in July. One wonders if this was a member of a second brood as it was fairly fresh. This seems unlikely in a year such as we have had.

Although all moths were very scarce, this being particularly noticeable at ivy bloom, I caught one of particular interest, *Oporinia autumnata*. I saw several on the west side of the Conway Valley. They rose from the birch trees and were quickly carried aloft by the strong wind. They simulate *Oporinia christyi* Prout, but are easily distinguished

when you have them side by side. I took one of the latter at light near Selby about the beginning of October while successfully inspecting sugar for *Catocala nupta*. According to my old edition of 'South' there is only one record of *Oporabia autumnata* having been found in Wales.—A. M. R. HERON, M.B., Ch.B., 108 George a Green Road, Wakefield.

FURTHER NOTES ON LEPIDOPTERA IN THE TETBURY (GLOS.) AREA, 1951.—Since my notes dated 7th October and printed in the November issue (*Ent. Rec.*, 63: 251) I have only seen, in addition to species already given, *Agrochola macilenta* on 13th October, which I find not so common as *A. lota* here, and *Lithophane socia* on 18th October.

On 21st April 1951, I took a female *Xylocampa areola* at rest on a tree trunk. I kept it alive until 19th May, by which time it had laid 387 eggs. On opening the abdomen of the dead moth I found 9 eggs remaining.

In September a friend who was staying in the Isle of Jura sent me a series of unset specimens of *Euxoa tritici*. I have also examined specimens in other collections and I feel convinced now that all those I have taken in Tetbury and district are of the form *aquilina* Hübner, which are noticeably larger and of a paler brown.—J. NEWTON, 11 Oxleaze Close, Tetbury, Glos. 31.xii.51.

[*Euxoa aquilina* Schiff. is a species distinct from *E. tritici*, but there is a form of *tritici* which resembles *aquilina* and this is thought by some entomologists to be a third species.—Ed.]

DIPTERA

A Note on the Mugwort-stem Fly, *Oxyna parietina* Linn.

By L. PARMENTER, F.R.E.S.

This fly appears to be known, so far, from few localities in Britain. Now that we have a colour plate and a brief life history devoted to it in Colyer and Hammond's *Flies of the British Isles*, it is hoped that further knowledge of the creature will be obtained.

Turning over my notebooks I found that I bred the species in 1947 from pupae gathered under the guidance of Mr. H. Britten, jun., at Coulsdon, Surrey. The flies emerged in mid-May about the time—22nd May 1947—when I swept a pair off *Umbelliferae* at Swanscombe marshes, Kent. Previously it had been recorded from Kent in June by H. W. Andrews, and in Yorkshire, 3rd-27th June, by W. D. Hincks. Mr. Andrews some years ago very kindly gave me a few pairs he had bred from Eltham, Kent, in May 1943.

Stems of Mugwort, *Artemisia vulgaris* L., were collected in May after a stem had been split and had proved to hold dark brown to black pupae, just under the epidermis. These occupied stems appeared to be tougher than unoccupied stems and one wondered how the flies emerged. Examining the split stem it was found that each pupa was tilted towards a "window"; the stem had been scraped so thin that light could be seen through the skin remaining. In a length of stem seven inches long were 29 pupae varying in colour from brown to black with dark brown at one end. In some this lighter end was greyish olive. One very dumpy

yellowish white larva was found with mouth hooks well withdrawn and a rounder shape than the pupae.

On emergence the wings were light golden in colour but soon darkened; the ovipositor of one female turned from light yellow to black within 15 minutes.

Sluggish at first, they walked about with wings held at an acute angle from the sides, occasionally flashing them open. The males emerged first but although a few females were out on the same day they never became as numerous, males being nearly three times as many as the females.

To watch them more closely I took my Greenough-type binocular off its stand and, using it as a field-glass, I turned on a table-lamp. The light, or its heat, increased the activity of the flies immediately, causing them to run and to jerk their wings more quickly. Shifting the light from one end of the jar to the other brought instant reaction from the flies. Examining the flies the next day, activity had noticeably decreased despite an hour of lamp-light.

Five days after emergence I found that I had unfortunately overlooked a few of the flies left in a small collecting tube. They had lived without moisture or food for the full five days!

At the time I was distracted by more exciting field work and now feel I missed an opportunity to find out more of the fly's life-history. Perhaps others will assist in adding details, describing the early stages, the vice-county distribution, etc. Professor Varley, A. C. Baker, *et al.*, have shown how interesting are the shapes of the eggs of Trypetidae. Anyone attempting to describe the early stages of *parietina* would be well advised to study Professor Varley's 1937 paper.

Mr. J. E. Collin has given us a key to the genera of the Trypetidae and a key to the species of *Oxyna*, the latter repeated by Mr. H. W. Andrews in two papers, illustrated in one. These with the plate in Colyer and Hammond's book will enable all dipterists in this country to identify the fly.

An examination of mugwort stems during the months prior to May would locate the breeding territories. Some attention should be paid to habitat, for though the plan favours waste ground, not all the affected plants I have found have been in full shelter from the wind.

Messrs. Niblett and Andrews have quoted the species as being reported to form galls, presumably quotations from Houard or Séguy. I suspect here a mistaken identity, for *Paroxyna misella* Lw. forms galls on mugwort and is superficially somewhat similar. Confirmation of the breeding of *parietina* from a gall is still desired.

I have not bred any parasites from *parietina* material although Chalcidae attacking several species of Trypetidae are present at Coulsdon. When parasitism is discovered it should be borne in mind that Mr. Niblett has shown with other Trypetidae that parasitism by Chalcidae may cause premature pupation.

Mr. Collin has suggested that the flight time of the adult may be very short. It seems to be so in several other Trypetidae and the flies may be very restricted in their habitat, being confined to *Artemisia* for breeding. Professor Varley estimates the life of *Urophora jaceana* Hering as averaging one month in the wild for the species, with a female living probably not more than one week. In his laboratory breeding experiments he has kept them alive longer by providing sugar food.

Moreover, he has shown that feeding on sugar increased the fecundity. This suggests that in the wild, nectar feeding may assist females in egg production. Therefore, a spell of sunny weather not only keeps the fly more active but, by keeping flowers open and stimulating nectar flow, may result in an abundance of eggs one year with a host of flies the following year.

Dr. Hanna, however, has demonstrated that cane sugar and nectar produce only carbohydrates, and females of *Ceratitis capitata* Wied. when fed only on cane sugar did not lay their full complement of eggs, as protein is also required for egg production. But Dr. Hanna found that when fed on protein only, such as a water solution of egg, the flies lived only seven days and laid no eggs. However, protein plus cane sugar produced optimum results. The observation of the feeding of adult *parietina* flies in the field would, therefore, be worth recording. My captures of the adults at Swanscombe may have been of flies taking nectar at the flower table of the umbellifers I swept. Another chance of useful observation missed!

Although I found pairs of *parietina* in coitu in my breeding jars I omitted to time them nor even noted any sign of display prior to coupling. Dr. Hanna found that *Ceratitis capitata* mated between 9 a.m. and 1 p.m., and the coupling lasted between 1-3 hours, averaging 2 hours 10 minutes.

Dr. Hanna also observed the attraction to light by the species he studied and noted that in summer shade was preferred and in winter, sunny locations. He used this observation in placing his traps for *C. capitata*, the pest of peaches and citrus fruits.

Another point which might be studied is dispersal. Professor Varley, using "Robialine" enamel, marked a number of *Urophora jaceana*, and 14 days afterwards found that some of the flies had travelled up to 22 yards. As *parietina*, at present, is only known to occur in widely separated localities, testing its rate of dispersal in its presumably short flight time, would be interesting.

Contributors to the *Ent. Record* have already considerably advanced our knowledge of the distribution and habits of the Trypetidae in Britain and may, therefore, care to pay some further attention to *parietina*.

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COLEOPTERA

The Coleoptera of a Suburban Garden

4—Rhynchophora

By A. A. ALLEN, B.Sc., A.R.C.S.

(Continued from Vol. 63, page 259.)

CURCULIONIDAE

Apion ulicis Forst.—One specimen by sweeping long grass under apple trees, 28.v.51; presumably a casual visitor, as there is no *Ulex* in the garden or (as far as I know) anywhere near.

Apion malvae F.—An example of this mallow-feeder was taken under the same conditions as the last, and on the same day; the host-plant, again, is absent from the garden, and hollyhock—on which it might live—does not appear to yield the species here.

Apion miniatum Germ.—By sweeping herbage; one specimen only, 6.vi.51. So far not found by searching dock, on which it feeds.

Apion haematodes Kby.—One swept from coarse grasses in Sept. 1950. Its pabulum here is most likely common sorrel (*Rumex acetosa*), since *R. acetosella* probably does not occur.

**Apion varipes* Germ.—A specimen was beaten out of old ivy on a wall, where it was evidently hibernating, 11.xi.51. Said to be very local, but it seems to be found, sparingly, in most districts.

Apion apricans Hbst.—Singly by sweeping in weedy places; very scarce; first noted 6.vi.51, and a few more subsequently. Like the last species, associated chiefly with red clover (*Trifolium pratense*).

Apion assimile Kby.—On species of clover and by sweeping mixed herbage; taken only sporadically between May and August of the last three years, though in most places one of the commonest of this group of the genus.

Apion aestivum Germ. (= *trifolii* Bach, Fowl.).—As for the preceding species; apparently rare, but quite possibly confused in the past with *assimile*; the sole record seems to be of one specimen, 28.v.51.

Apion dichroum Bed. (= *flavipes* Payk.).—By general sweeping on lawns and waste places, from spring to autumn; not abundant, but easily the commonest of the red- or yellow-legged Apions in the garden. Odd specimens also found wintering in refuse, under pear log, at grass roots, and in ivy, holly tree, and hawthorn hedge. Lives mainly on the white clover (*T. repens*).

Apion nigritarse Kby.—One example beaten from old ivy on a wall, together with a few of the last species, 6.xi.51. (Everywhere much less common than *A. dichroum* in my experience.)

Apion hookeri Kby.—A specimen, probably accidental, was swept off long grass under apple trees, 5.vi.51. I have not noticed any of its foodplants (*Matricaria* and *Anthemis* spp.) in the garden, though *M. Chamomilla* grows on some of the roadsides nearby. Like *A. malvae* above, it may have strayed from the adjoining field.

Apion aeneum F.—On hollyhocks (*Althaea rosea*) in company with the next, but usually very sparing or not to be seen at all amongst the numerous *A. radiolus*. However, on 15.x.51 it outnumbered the latter, and a week later the two species were in roughly equal quantity. First noted 18.viii.51.

Apion radiolus Kby.—In profusion from spring to late autumn on hollyhocks, to which it does considerable damage; quite the most abundant species of this large genus in the garden. Unlike most of them it feigns death for some time in the net. Many pairs *in cop.* observed in late May and early June.

**Apion pubescens* Kby.—This very local species has occurred in some small numbers at intervals from July to September in the past two years by sweeping over a lawn, and odd examples shaken off michaelmas daisy and golden-rod flowers bordering it. Not found in other parts of the garden. Foodplant very doubtful; possibly here *Prunella vulgaris*, which grows on the lawn—as in Cornwall I took it at roots of plants which usually included thyme, on several occasions; certainly not willow in this case, there being no *Salix* anywhere near.

Apion violaceum Kby.—A single specimen swept from common dock (*Rumex obtusifolius*) on a patch of waste ground, 21.v.51.

Apion curtirostre Germ. (= *humile* Germ.).—By sweeping mixed vegetation; very infrequent (iv.49, viii.50 (2), 4.vi.51). Feeds on sorrel and perhaps other species of *Rumex*.

Otiorrhynchus singularis L. (= *picipes* F.).—Not uncommon in recent years in spring and early summer under clods and boards, etc., and at roots of fruit trees and herbage; occasionally later in the season by general sweeping (latest date 21.vii.50).

Otiorrhynchus sulcatus F.—In like situations, but more strictly nocturnal in habits as I have never taken it by sweeping; found most freely in spring at roots of grass and in the soil along the base of a fence. One indoors in radiogramophone (!) in June. Larvae dug up out of turf, 15.iv.51, adults emerged about a month later. Less common in August; three under stones, 18.viii.51. First seen May 1944.

Phyllobius pyri L.—Unaccountably scarce; two specimens knocked off *Pyracanthus* blossom in June 1950 are all that have occurred.

Phyllobius parvulus Ol. (= *viridiaeris* Fowl.).—One by sweeping or beating shrubs (pear foliage?) in the same month as the last. This genus of mostly common weevils is remarkably poorly represented.

Barypithes pellucidus Boh.—Not rare from about the end of March to June, after which it becomes less frequent; singly at roots of herbage, and by sweeping grass especially in warm weather after rain, but chiefly under planks, etc., and pieces of boarding placed on soil near currant and other bushes as traps. More than four individuals have been found beneath one such trap, but this is exceptional. Latest date 18.viii.51 (one under stone). First taken 1929. Considered very local, but seems common enough in the south-east.

Sitona lineatus L.—By sweeping clover and other low plants, April to October; not at all plentiful, but noted at intervals from 1927 onwards. Our beans and peas seem free from its attentions.

Sitona lepidus Gyll. (= *flavescens* Marsh.).—As for the last, except that it is decidedly more common.

Sitona hispidulus F.—The commonest of the genus in the garden, though never abundant; found throughout the summer; several at roots of clover in April, and two swept off the same plants in mid-October.

Phytonomus rumicis L.—A single example taken from a leaf of dock in April 1929 (the first I ever found) is still the only record. To me this species has never been plentiful anywhere.

Phytonomus nigristrois F.—Has likewise occurred but once, flying on a hot day in April 1930. (The rarity of this genus in the garden is strange, seeing that several are clover feeders and generally distributed; at least two other species should occur.)

Tychius (Miccotrogus) picistrois F.—Rather common, in summer by sweeping clover and various weeds, from autumn to spring at roots of vegetation. Noticed only in recent years, but almost certainly overlooked earlier.

**Sibinia primita* Hbst. (= *signata* Gyll. nec Joy, *arenariae* Joy in error).—This beautiful little weevil has turned up unexpectedly during the past year by ones and twos on the flowers of golden-rod (*Solidago*)—which have proved attractive to beetles—from July to September. Less than a dozen have been taken so far; two only by general sweeping, the first off grass beneath fruit trees in June 1950. Foodplant uncertain; it should be one of the Caryophyllaceae; I thought it might be chickweed (*Stellaria media*), which abounds, but could not find the beetle on it.

Anthonomus pomorum L.—The 'Apple weevil' does not trouble us unduly here, as all I have been able to discover is one specimen, by beating an apple tree in July 1950.

Anthonomus rubi Hbst.—The only example found hitherto was brushed from foliage of raspberry and blackberry, 28.v.51.

Ceuthorhynchus assimilis Payk.—By sweeping rank herbage; one, 5.viii.50. Usually a common species on Cruciferae.

Ceuthorhynchus cochleariae Gyll.—One by general sweeping, 5.vi.51; another in the same area by shaking dead *Alyssum saxatile* and *Arabis* sp. where the two grow together, 6.xi.51. Its host-plant in the garden is doubtless one or both of these cultivated Crucifers, as the ordinary one, *Cardamine pratensis*, seems absent therefrom.

(To be continued.)

Fifty Years Ago

(From *The Entomologist's Record* of 1902)

SPREAD OF BUTTERFLIES INTO SUITABLE LOCALITIES.—Mr. A. H. Clarke in his note in the *Ent. Rec.* for January, on the spread of butterflies into suitable localities, mentions *Polyommatus bellargus* as one of the species which has recently arrived at a locality near Marlow. This is of much interest to us here because the same thing has happened on

the chalk downs to the south-east and east of Oxford. In former days all the Reading collectors went to Folkestone when they wanted the species, as it was utterly unknown in their district. About 1894 or 1895 a boy* took a specimen at Streatley, and individuals in small numbers were taken in succeeding years. In August 1899 I was collecting on the downs between Streatley and Blewberry when I suddenly came on *P. bellargus* flying in abundance and on ground which I used to visit regularly without ever seeing the species. Here and there in spots among the hills I met with them in plenty. Probably in the earlier days the species existed somewhere on the Berkshire downs, but beyond the reach of our visits, and has gradually increased its range until it now occurs right up to the point where the chalk is covered by the tertiary strata towards Reading, and also at Hardwick, in Oxon, having apparently crossed the river. In this way it may have continued along that side of the river, through Henley to Marlow.—W. HOLLAND.

ABUNDANCE OF *HYDROPHILUS PICEUS* AT ELECTRIC LIGHT.—Walking across the Piazza Reale at Turin on the morning of August 23rd, I observed on the ground beneath the electric lights, among hundreds of moths that had met their doom by being attracted to the light during the preceding night, a great many large examples of this species, sometimes five or six specimens under a lamp and rarely less than three or four. Almost all the squares of the city, which were provided with lamps that were open below, were similarly bestrewn with the dead bodies of the beetles. Altogether I must have seen some 40 examples in only three or four squares, so that the total number attracted in the city in one night must be enormous.—J. W. TUTT.

[*His initials were P.B.M.A.]

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The high standard reached in recent years has been fully maintained. There are no coloured plates, but the black and white plates are even better than usual, and the one showing somatic mosaics and gynandromorphs of *Abraaxas grossulariata* is outstanding. The papers are well chosen to suit the varied tastes of members. H. S. Robinson gives a very clear account of his views in a paper entitled "The Effects of Light on Night-flying Insects." "Notes on Scandinavian Rhopalocera" by Bjorn Petersen has a wider interest for British lepidopterists than its title suggests. "Further Observations on Hibernation" by F. V. L. Jarvis supplements his previous paper of nine years ago. "The Structure and Function of the Endocrine Glands of the Lepidoptera" is a valuable summary of old and recent work. How many of us knew before we read it that the pars intercerebralis of the brain and the prothoracic glands together control diapause? The editor is to be congratulated, but we are warned that next year the publication will be smaller and less profusely illustrated owing to the high cost of publication.

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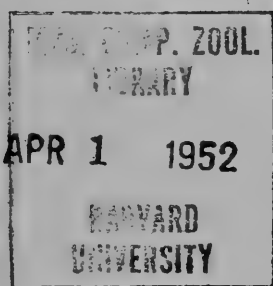
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Aberrations of British Macrolepidoptera
(Geometridae)

By E. A. COCKAYNE, D.M., F.R.C.P.

PLATE III.

[The following aberrations are in the Rothschild-Cockayne-Kettlewell collection in the British Museum.]

Archiearis parthenias Linnaeus ab. **cuprea** ab. nov. (Fig. 1).

On the forewing between the basal and antemedian lines the area in the cell and to a less extent that between the median nervure and nervure 2 is pale copper colour; the area external to the reniform and that between the postmedian line and the subterminal line are also pale copper colour and there is a line of the same colour bordering the subterminal externally; the reniform ringed with black stands out very clearly. The hindwing is normal.

Type ♀: Loc. incog. (F. Bond coll.) Cockayne coll.

Paratype ♀: Loc. incog. (Bright coll.) Rothschild coll.

Archiearis parthenias Linnaeus ab. **albofasciata** ab. nov. (Fig. 2).

On the forewing the basal line is absent; the antemedian and postmedian lines are very thick and without any of the usual indentations; there is a white fascia, sharply defined internally but ill defined externally, external to the postmedian line. The hindwing is normal.

Type ♀: Loc. incog. (F. Bond coll.) Rothschild coll.

Archiearis notha Hübner ab. **intermedia** ab. nov.

The rich orange of the hindwing is replaced by orange yellow or dull yellow with little trace of orange.

Type ♂: Kingston, Surrey, Percy Richards. (Bright coll.) Rothschild coll.

Allotype ♀: Same data.

Paratypes 2 ♂: Worcester, J. Peed. Cockayne coll.

Archiearis notha Hübner ab. **obscura** ab. nov.

The forewing is uniformly dark brown with the pattern scarcely visible and with no white spot on the costa. The hindwing is normal.

Type ♂: E. Suffolk, bred 31.iii.1929 by R. Adkin.

Paratypes 4 ♂: 2♂ E. Suffolk, bred 30.iii.1929 by R. Adkin, 2 ♂ Raydon, Suffolk, bred iii.1930 by Harwood. Cockayne Coll.

Archiearis notha Hübner ab. **diluta** ab. nov.

The forewing has a pale faded appearance due to all the black scales having been replaced by brownish ones. On the hindwing the black markings are replaced by grey.

Type ♂: Loc. incog. (F. Bond coll.) Rothschild coll.

Archiearis notha Hübner ab. **cuprina** ab. nov.

On the forewing the basal area, a median band running through and including the reniform, and a narrow band along the termen are blackish

brown; all the rest of the wing is pale copper colour and lightly dusted with blackish brown scales especially along the nervures.

Type ♂ : Loc. incog. (F. Bond coll.) Rothschild coll.

Pseudoterpnæ pruinata Hufnagel ab. **cotangens** ab. nov.

The antemedian and postmedian lines of the forewing are united in the middle of the interspace between nervures 1 and 2 and remain united to form a dark triangular mark on the inner margin.

Type ♀ : New Forest, 24.vii.1904. (Clark's sale) Burrows coll.

Comibaena pustulata Hufnagel ab. **rosea** ab. nov.

The green ground colour is replaced by pink.

Type ♀ : New Forest, 1907, C. Gulliver. (Bright coll.) Rothschild coll.

This form has been bred and the change of colour is not caused by damp or exposure to light.

Cosymbia pendularia Clerck (*orbicularia* Hübner) ab. **semistriata** ab. nov. (Fig. 3).

The dots in the row outside the median line on both fore and hindwing are elongated to form short streaks.

EXPLANATION OF PLATE IV.

- Fig. 1. *Archiearis parthenias* ab. **cuprea**. ♀. Type.
 Fig. 2. *Archiearis parthenias* ab. **albofasciata**. ♀. Type.
 Fig. 3. *Cosymbia pendularia* (*orbicularia*) ab. **semistriata**. ♀. Paratype.
 Fig. 4. *Cosymbia linearia* ab. **arcufera**. ♂. Type.
 Fig. 5. *Cosymbia annulata* ab. **striata**. ♀. Type.
 Fig. 6. *Cosymbia porata* ab. **basirubra**. ♀. Type.
 Fig. 7. *Cosymbia porata* ab. **vinicolor**. ♂. Type.
 Fig. 8. *Sterrha aversata* ab. **quadrilineata**. ♀. Type.
 Fig. 9. *Ortholitha mucronata* ssp. **scotica** ab. **clausa**. ♀. Type.
 Fig. 10. *Carsia paludata* ssp. **anglica** ab. **coarctata**. ♂. Type.
 Fig. 11. *Anaitis efformata* ab. **pauper**. ♂. Type.
 Figs. 12, 13, 14. *Hymenia recurvalis*.
 Fig. 15. *Argynnis aglaia* ab. **robnora**. Type.
 Fig. 16. *Argynnis aglaia* ab. **mitchelli**. Type.

Type ♀ : New Forest, bred 31.v.1893, by Gulliver. Bankes coll.

Paratypes 2 ♀ : 1 ♀ New Forest, 1910, Gulliver. R. Adkin coll. 1 ♀ New Forest, bred 30.v.1910. (Gibbs coll.) Rothschild coll.

Cosymbia pendularia Clerck (*orbicularia* Hübner) ab. **biobsoleta** ab. nov.

There is no ocellus on either fore or hindwing.

Type ♂ : Loc. incog. (Bright coll.) Rothschild coll.

Allotype ♀ : New Forest, bred 1909 by A. Horne. R. Adkin coll.

Cosymbia linearia Hübner ab. **alba** ab. nov.

The ground colour of the wings, the head, thorax, abdomen, and all other parts of the insect are white, the markings on the wings are faint and grey.

Type ♂ : Epping Forest, Essex, J. W. Tutt. (Bright coll.) Rothschild coll.

Cosymbia linearia Hübner ab. **arcufera** ab. nov. (Fig. 4).

On the forewing all the lines are displaced towards the base, the first and second lines are united along the costa and again along the



1



2



3



4



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6



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8



9



10



11



12



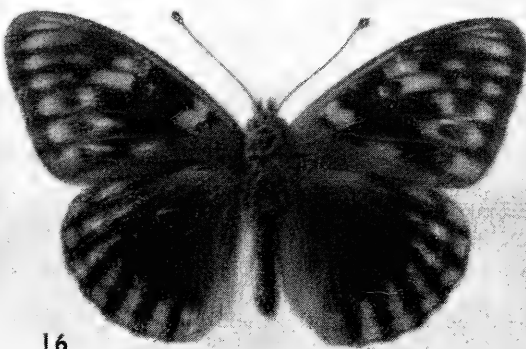
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14



15



16

subcostal nervure and nervure 6; the third line is replaced by a row of black dots which run inwards faintly along the nervures; there are also faint blackish streaks in all the interneural spaces. On the hindwing the lines are displaced towards the base; the first and second lines are fused to form a broad suffused band or shade; the third line is broad, suffused and broken in the middle, and the nervures running in from it are powdered with black.

Type ♂: Pelham Wood, Caistor, N. Lincs., G. W. Mason. (B. W. Adkin coll.) Cockayne coll.

Cosymbia annulata Schulze ab. **decolorata** ab. nov.

All the markings are buff coloured instead of blackish.

Type ♂: Buckerell, Devon, 1906, W. S. Ridging. (Bright coll.) Rothschild coll.

Cosymbia annulata Schulze ab. **striata** ab. nov. (Fig. 5).

On the forewing the first line is represented by small black dots on the nervures linked together by a few grey scales; the second and third lines are represented by a row of neural streaks except on nervure 5 where there is a single black dot. The hindwing is lightly marked but normal.

Type ♀: New Forest, vi.1912, L. W. Newman. (Bright coll.) Rothschild coll.

Cosymbia porata Linnaeus ab. **basirubra** ab. nov. (Fig. 6).

On the forewing the ground colour is pale and not speckled; there is a dark red area running from the first line near the base to a point just beyond the ocellus and from the submedian nervure to the inner margin; the median shade is absent.

Type ♀: Eynsford, Kent, vii.1900, J. Greenwood. (Bright coll.) Rothschild coll.

Cosymbia porata Linnaeus ab. **vinicolor** ab. nov. (Fig. 7).

The thorax and ground colour of the fore and hindwing are uniform deep vinous red almost completely concealing the markings and the speckling, which is of average density.

Type ♂: Oxshott, Surrey, bred vi.1901 by R. Adkin from eggs laid by a female taken viii.1900.

Calothysanis amata Linnaeus ab. **pulverata** ab. nov.

Both fore and hindwing are so thickly powdered with dark grey atoms that they appear to be dark grey; the pink oblique stripe is normal and the fringes are pink.

Type ♂: Mucking, Essex, vi.1906, C. R. N. Burrows.

Scopula imitaria Haworth ab. **brevipennis** ab. nov.

The fore and hindwing are shorter and broader than usual, the costa and inner margin being of about the same length; the oblique stripe is displaced towards the base and almost meets the first line on the inner margin; the discoidal spot of the forewing lies in the oblique stripe.

Type ♂: Tring, Herts., bred 2.viii.1945 by A. L. Goodson. Cockayne coll.

Sterrrha aversata Linnaeus ab. **quadrilineata** ab. nov. (Fig. 8).

On the forewing the submarginal line is very strongly developed forming a complete line, broader and more distinct than any of the others; the ground colour is unusually pale and the aberration has no band.

Type ♀: Watergate, Emsworth, Hants., 18.v.1893, W. M. Christy.

Paratypes 2 ♀: Same data.

Sterrrha aversata Linnaeus ab. **approximata** ab. nov.

On the forewing the middle line is displaced towards the base so that it approaches the first line very closely.

Type ♀: Netley, 2.xi.1917, L. B. Prout.

Sterrrha inornata Haworth ab. **rufescens** ab. nov.

There are two distinct forms in England, about equally common, one with a grey ground, *inornata* Haworth, and the other with the ground tinged with rufous. The latter I name ab. *rufescens*.

Type ♂: Bexley, 4.vii.1900, W. H. Harwood. Christy coll.

Allotype ♀: Wimbledon, bred 6.x.1898 by L. B. Prout. Prout coll.

Paratypes 3 ♂, 3 ♀: 1 ♂ Huddersfield, bred 12.vii.1902. R. Adkin coll. 1 ♂ Southgate, Middlesex, bred 28.vi.1920 by J. Bate. B.M., 1937, 139. 1 ♂ Wimbledon, 1898, L. B. Prout. R. Adkin coll. 1 ♀ Wimbledon, bred 3.x.1898 by L. B. Prout. 1 ♀ Wimbledon, bred 1.x.1898 by L. B. Prout. 1 ♀ Wimbledon, 1899, Taylor. R. Adkin coll.

Sterrrha inornata Haworth ab. **approximata** ab. nov.

On the forewing the middle line is displaced towards the base so that it approaches the first line very closely and the discoidal spot lies external instead of internal to it.

Type ♀: Limpsfield, bred 2.x.1927 by E. A. Cockayne.

Ortholitha mucronata Scopoli ssp. *scotica* Cockayne ab. **clausa** ab. nov. (Fig. 9).

On the forewing the antemedian and the postmedian lines meet on the inner margin forming a V.

Type ♀: Loc. incog. Rothschild coll.

Ortholitha chenopodiata Linnaeus ab. **coarctata** ab. nov.

The median band of the forewing is about half the normal width.

Type ♂: Prestatyn, 3.vii.1943, H. B. Williams. B.M., 1951, 4.

Anaitis efformata Guenee ab. **pauper** ab. nov. (Fig. 11).

On the forewing the antemedian line is narrow and the postmedian broad, both solid without the usual parallel thread like lines, and both are more oblique than usual; there are no markings in the marginal area and the pale submarginal line is absent but there is some darkening of the ground colour towards the margin.

Type ♂: Box Hill, Surrey, C. H. Williams. Cockayne coll.

Carsia paludata Thunberg ssp. *anglica* Prout ab. **coarctata** ab. nov. (Fig. 10).

The antemedian line is displaced outwards and the postmedian inwards so that they lie close together; the space between them is completely filled with dark scales.

Type ♂: Carlisle, 1.ix.1902. (Bright coll.) Rothschild coll.

Three Forms of *Aphantopus hyperantus* Linnaeus and one of *Coenonympha tullia* Müller which may be new to the British List

By N. C. PILLEAU.

In amalgamating my own collection of *Aphantopus hyperantus* Linnaeus with that of a friend I have had the assistance of Mr. A. L. Goodson at Tring Museum, who very kindly named nearly all of them. There were, however, three forms which he had not previously seen, and as they may be new to the British list I have named them and append a description.

1. *Aphantopus hyperantus* Linnaeus ab. **nigra** ab. nov.

The ocelli are normal, but the ground colour of both upper and undersides is blackish brown.

Type ♂ : West Sussex. (N. C. Pilleau coll.)

2. *Aphantopus hyperantus* Linnaeus ab. **caecimaculata** ab. nov.

The underside has ocelli with no white pupils on both fore and hindwings.

Type ♀ : West Sussex. (N. C. Pilleau coll.)

3. *Aphantopus hyperantus* Linnaeus ab. **goodsoni** ab. nov.

On the underside the forewings are obsolete, and the lower wings have four blind ocelli on each wing.

Type ♂ : West Sussex. (N. C. Pilleau coll.)

In June 1937 at Thorne Moor, Doncaster, I captured a *Coenonympha tullia* Müller which had both bands and spots missing on the underside. I have named this also and append a description.

4. *Coenonympha tullia* Müller ab. **thornensis** ab. nov.

There are no ocelli on the underside of the hindwings and the transverse band is absent on both fore and hindwings.

Type ♀ : Thorne Moor, Doncaster, 1937. (N. C. Pilleau coll.)

Two New Aberrations of *Argynnis aglaia* Linn.

By S. H. KERSHAW.

See Plate III.

Argynnis aglaia ab. **robnora** ab. nov. (Plate III, fig. 15).

Upper side of forewings. The median black spots are reduced in size and less boldly marked, whilst in the discoidal cell instead of four black costal stripes there are only three, the third from the base being absent. The postmedian black spots are somewhat enlarged, becoming suffused into a dusky band towards the costa. The outer margins blackened, enclosing elongated spots of orange brown ground colour giving a rayed effect.

Upper side of hindwings. All black with the exception of a row of oval marginal spots of orange brown which become longer and more ray-like as they reach the apex.

Underside of forewings. As in the normal male but more lightly spotted.

Underside of hindwings. Similar to ab. *charlotta* Haw., with the basal spots in the form of three large pear-shaped silver spots and the margins rayed with silver.

Type ♂: Isle of Man, 12.vii.1948. (S. H. Kershaw coll.)

Argynnis aglaia ab. **mittelli** ab. nov. (Plate III, fig. 16).

Upperside of forewings. The discoidal cell filled in with black from the second costal stripe to the discocellular vein, leaving only a patch of normal ground colour between the black area and the first stripe which is normal as is also the base. The median area of the wings is blackened uniting with the black of the cell, forming a broad oblique band, widest in the centre and narrowest just above the inner margin. The postmedian spots, less black in colour, are enlarged, some elongated, and suffused, forming as they approach the costa a cloudy area. The outer margins are suffused blackish enclosing a transverse row of orange brown spots, also suffused.

Upperside of hindwings. All black with the exception of inter-neural marginal rays of orange brown colour which become longer as they reach the apex. The black area is dusted with long orange scales towards the base.

Underside of forewings. Rayed margins with traces of silver. Rest of wing black.

Underside of hindwings. Similar to ab. *charlotta* Haw., with the basal spots in the form of three large pear-shaped spots of silver and the margins rayed with silver.

Type ♂: Isle of Man, 12.vii.1948. (S. H. Kershaw coll.)

Hymenia recurvalis Fabricius in Britain

By FRANK H. LEES.

At Maidencombe, on Friday, 7th September, after a cloudy day my light trap (an old one fitted with an 80 watt M.V. lamp) was shining out seawards onto, as it were, a veritable screen of mist brought in by a light south-easterly breeze. Precipitation was only just short of actual rain and the thermometer reading (inside the first floor window from which the trap operated) was 65° F. Such conditions usually mean a rewarding night. Be the reasons what they may, it was no surprise to me the next morning to find over 200 "Macros." and some 40 Pyrales in the trap. Two small Pyrales reminded me of *Diasemia ramburialis* Dup., which I had not seen since 1946, so they were retained. A cooler showery night then intervened on 8th September with only 50 insects of 21 species of little interest. Then on Sunday night, 9th September, a change in the weather came about midnight. A sea mist rolled in from S.S.E. and the temperature rose several degrees. Very soon afterwards moths came flying into and around the trap in droves to the gratification of an attendant escort of bats. The trap's share, a count taken next morning, was 432, but of the 40 different species this time *Deuteronomos alniaria* was the least familiar, and the most interesting to me one more problematical *ramburialis*. There had been little indication here in early September of any general invasion of migrants other than the usual *Plusia gamma*, *Nomophila noctuella*, and *Laphygma exigua*. On 9th September *gamma* reached its peak with 112 specimens, the average over the previous week having been 13 a night, but the numbers of *exigua*

and *noctuella* were, as they had been throughout the season, insignificant, rarely exceeding two a night for the *Pyrale* and a very occasional *exigua*.

It was not until much later when I removed the three insects from the setting board that I seriously tackled the problem of identification of the mysterious *Pyrales*. Comparing them in detail with the figure of *Diasemia ramburialis* in Leech's *British Pyrales* and my previous captures in 1946, I felt convinced that though the latter are correctly named the newcomers called for further investigation. I submitted them to our Editor at Tring to whom I now hand over my story.

A Note on *Hymenia recurvalis* Fabricius

By E. A. COCKAYNE, D.M., F.R.C.P.

The *Pyrale* taken by Mr. Frank Lees is *Hymenia recurvalis* Fabricius (*Syst. Ent.*, 1775, 644) of which *fascialis* Stoll in Cramer (*Pap. Exot.*, 1782, 4, 236, Pl. 398, fig. O) is a synonym. Until this year it had not been taken in the British Isles, but I am told that it has come to light at two other widely separated places on the South coast and the dates were almost exactly the same as those of the captures at Maidencombe in S. Devon.

I am indebted to Dr. J. D. Bradley of the British Museum (Nat. Hist.) for much of the information about this species. It is found all over the tropical and subtropical regions of both hemispheres and extends to Syria and Cyprus. In the Western Hemisphere the insect has the black markings more strongly marked. The Maidencombe examples agree with those from the Eastern Hemisphere. In some places it is a pest and most of the literature about it is published in journals devoted to economic entomology. The following summary is from the *Bull. U.S. Agric. Bur. Ent.*, 1911, nr. 109, pt. 1, pp. 1-15, figs. 1 and 2. The larva feeds on the underside of leaves of sugar beets, mangel-wurzels, *Amaranthus* ssp., purslane, cucumbers, chenopodiaceous weeds, and other garden plants. In Hawaii all stages of this species are found throughout the year. The moth remains concealed during the day, but when disturbed flies readily. It is rarely attracted by lights. Eggs are deposited on the underside of a leaf singly, in pairs, or in rows of five or more. The larva usually remains on the under side of the leaf and sometimes spins a slight web under which it rests. It burrows slightly beneath the surface to pupate and makes a firm, compact, oblong cocoon of earth. The larva is pale green until it is ready to pupate and then becomes reddish pink. In Hawaii there are twelve generations in a year, but in a less equable temperature there are fewer.

The question that arises is how the *Pyrale* reached the greater part of the south coast of England at almost exactly the same date. I think accidental transportation by ship or aeroplane can be ruled out, and three possibilities remain. It migrated from the southern shores of the Mediterranean or from further afield on its own wings or it was lifted up by an air current, borne northwards, and then dropped again. In either case many thousands must have reached the south coast. There is another possibility. The *Pyrale* may have established itself in favourable localities having arrived in a previous year. This seems to me improbable. If that had been the case, earlier broods would have occurred

and specimens would probably have been captured before September, nor would all those of the September brood have emerged almost simultaneously.

Apart from the interest of a new addition to the British list the species may become of economic importance. Fortunately this is unlikely if one may judge by its distribution and by the fact that it is continuously brooded, but in the British Museum there is an example from Nyassaland taken at 3000 feet, so it may be able to survive in warm and sheltered places such as the coast of S. Devon and Cornwall. Wild beet, chenopodium, and atriplex are particularly common on the coast and the first named plant grows freely along the South Devon coast and estuaries. It is probable that specimens other than those already known have been taken this year and the figures on Plate III (figs. 12, 13, 14) will enable the captors to identify them with ease. I hope that anyone who has taken it will send a note to the *Record* giving the place, date, and the circumstances in which it was caught. It is worth noting that it is said to come to light rarely.

A Note on Rearing the Larva of *Luceria virens* Linn.

By B. J. LEMPKE.

The discovery of this fine moth in Western Ireland was no doubt one of the most fascinating events in the study of the British macro-lepidoptera during the last few years. The moth is generally distributed in the inland sandy districts of Holland, but very local in the dunes along the North Sea. It shares this distinctly eastern and southern distribution in Holland with the great majority of the macros which are indigenous to Holland but not to England. It is certainly not too fantastic to suppose that the greater part of these species only reached the Netherlands after the separation of England from the Continent. I am therefore convinced that Dr. de Worms's supposition is correct when he considers the Irish *L. virens* to be a very old member of the fauna of that island (1951, *Ent. Gazette*, 2: 163). The later *virens* wave reached the western shores of the Continent too late to penetrate into England.

Dr. Cockayne's paper on the breeding of the larva from the egg (1951, *Ent. Rec.*, 63: 271-273) reminded me of an article by R. Brinkmann, *Zur Oekologie von Luceria virens* L. (1934, *Int. ent. Z. Guben*, 23: 207-210), in which that writer described how larvae of *L. virens* were reared very successfully by Neumair, but only by neglecting the larvae more or less. He fed them with the lower parts of *Poa* stems, in which the caterpillars disappeared. Every second day he put some fresh stems on top of the old ones without removing anything. After some time, when looking carefully among the old material, he saw at the bottom of the aquarium in which the larvae were kept many tubes about 3 cm. long composed of grass and frass spun together. In one such tube he found a larva of about 3½ cm. As the bottom layer began to grow mouldy he threw the whole contents of the aquarium into a dish and found 17 large strong larvae (from 20 eggs) running about wildly. After having cleaned the container he put new grass into it.

The caterpillars disappeared at once to the bottom, where each one made a new tube. The rearing of these larvae was so easy that when it was impossible to look after them for a few days the aquarium was filled to the top with grass, completely shut off, and left so for four days. The ultimate result was 17 strong pupae, no doubt an excellent success.

So the only reason for Dr. Cockayne's failure is that he was too careful!
Oude Yselstraat 12iii, Amsterdam-Z.2.

The status of *Horisme aquata* Hübner as a British Species

By E. A. COCKAYNE, D.M., F.R.C.P.

Interest in *Horisme (Phibalapteryx) aquata* Hübner was first aroused by an article by J. W. Tutt (*Ent. Record*, 1900, **12**: 35) claiming that it was a native of the British Isles. This was followed by another article by L. B. Prout (*Ent. Record*, 1900, **12**: 85) pointing out the differences between *aquata* and *vitalbata* and giving some information about its distribution on the continent and the foodplants of its larva. Tutt wrote as follows: "Some eighteen years ago when everything was valuable, and I was eager to fill up my series, I made an exchange with a Mr. Burkhardt, I believe of Bradford, and in return for some common southern insects, *P. astrarche*, if I remember rightly, he sent me some examples of *P. vitalbata* that he had obtained in the Lake District—I believe he said in Cumberland, in 1882. One of them was a remarkably pale specimen with a white ground colour, and I wrote and told him I was much interested in the specimen and asked him if he had sufficient to give me more. Another exchange was arranged and he sent me four pale and three normal *vitalbata*, the pale being, I believe, all he had. He also informed me that he took them in the same locality, at the same time. I showed them to Mr. Tugwell and he thought so little of them that I did not trouble to give him one, but Mr. Coverdale and Mr. Bower, to whom I showed them, expressed some interest, and I accordingly gave them each a specimen. A year or two afterwards I bought Coverdale's collection before he went abroad, and so his specimen came back to me. I have the four specimens now. Mr. Bower spent an evening with me a little while since, and in the course of our gossip, he told me that shortly before the death of Mr. S. Stevens he was going through the latter's collection, when the latter pointed out a specimen of the pale insect labelled "unique." Mr. Bower told him that he had a specimen from me and gave him some details, and states that he then removed the "unique" from his cabinet. I have since had some correspondence with Mr. Prout about the insect, and he informs me that there were two examples sold with the Tugwell collection, one of which was bought by Dr. Sequeira, but he does not know what became of the other. These must have been obtained subsequently to my having shown him my specimens, but the locality seems not to be known. I have no doubt there are other examples in various collections passed over, as mine were for so many years, as pale forms of *vitalbata*."

J. C. Moberly (*Ent. Record*, 1900, **12**: 82) says he bought Tugwell's second specimen.

Prout accepted Tutt's specimens as British and says that Rössler and Hering indicate the larva as feeding on *Anemone pulsatilla* and *A. ranunculoides*, but the former says that in the absence of *Anemone* it can easily be reared on *Olematis*.

Tutt was right in thinking that specimens existed in other collections. In the Rothschild-Cockayne-Kettlewell collection in the British Museum there are eight—1, ex coll. Stevens, P. B. Mason, 1905, Banks coll. 2, Sherwood Forest taken by Mr. Trueman, coll. S. Stevens, 1900, P. B. Mason, 1905, Banks coll. 3, coll. F. Bond, Rothschild coll. 4, Recd. from York by J. W. Tutt, R. Adkin coll. 5, ex Coll. F. Bond, Rothschild coll. 6 and 7, Cumberland, /82, J. W. Tutt, Bright coll., Rothschild coll. 8, Tutt coll., H. J. Turner coll, B.M., 1951, 599.

None of these appears to have been reset, but the two from the Bond collection are on short black pins, which look too modern to be the original ones. The second specimen from the Stevens collection is on a long thin white pin with a flat head, which looks old.

In the Tutt collection sold at Stevens's, 19th September 1911, in lot 178, with other geometers, there were "*vitalbata* 15, whitish var. ? Cumberland 3." This lot was bought by P. M. Bright for 11/-, and passed with the rest of his moths to Lord Rothschild. Of the original five specimens only three remained in Tutt's collection, one having been given to Bower and another to H. J. Turner. All three should have been in the Rothschild collection, but there are only two there. The one labelled in neat script "Recd. from York by J. W. Tutt" was in the R. Adkin collection and is probably the one given to Bower.

What then is the status of *Horisme aquata* as a British species? There is no other species with any claim to a place in the British list about which so little is known. There can be no contemporary record of any of the old specimens, because *aquata* was not recognized and I have found no early record of pale *vitalbata*. Burkhardt did not label his insects and evidently did not value them highly. We do not know when he took his *aquata* or how much reliance can be placed on his memory of the locality. Tutt's statement that Burkhardt informed him that he took them in the same locality at the same time probably refers to the pale specimens, the *aquata*, only and not to the *vitalbata*. Barrett puts a different interpretation on it and says that "*P. aquata* is said to have been captured nearly twenty years ago along with *vitalbata* in Cumberland and taking into consideration that *vitalbata* is not, so far as is yet known, to be taken anywhere within one hundred and fifty miles of Cumberland and that the foodplants of both species are absent from the Flora of that County, it is desirable to wait for more definite and reliable data before including *P. aquata* among the inhabitants of the British Isles." Barrett's criticism loses much of its point if Tutt did not intend to include *vitalbata*, but he is right in saying that the foodplant of *aquata* has never been recorded from Cumberland.

After the lapse of eighteen years Tutt's recollection of what Burkhardt told him about insects which he regarded as pale aberrations of *vitalbata* may be unreliable and both the Lake District and Cumberland may be incorrect. His article is full of qualifications and is not written in his usual confident style. Even after he knew what they were, he did not label them. None of the labels on them is in his handwriting and all were labelled after they had passed out of his hands. I do not think

he placed the name of the species under them. If he did, why did they appear in the catalogue of his sale as whitish *vitalbata*?

I must now deal with the only specimen with a definite locality on the label. It has two labels, the first saying "Sherwood Forest taken by Mr. Trueman" and the second "ex coll. Stevens, P. B. Mason coll., 1905." Both are modern and are written by E. R. Bankes himself. Stevens had only one *aquata* when Mr. Bower visited him shortly before his death in 1900 and I doubt very much whether it was ever in Stevens's collection though there is no doubt it was in Mason's, at whose sale Bankes bought it. Sherwood Forest is a most unlikely locality and I place no reliance on either label, though the insect looks like an old and authentic one.

The fact that there are old specimens of varying age and set low is in favour of their being genuine British examples. They were mistaken for *Horisme vitalbata* and since *aquata* was not on the British list there was no incentive to unscrupulous dealers to import continental specimens and sell them as British. Burkhardt's specimens have a strong claim to be British even if the locality is uncertain. Since he exchanged them for comparatively worthless insects he can have had no motive for perpetrating a fraud.

It seems to me probable that *Horisme aquata* was a native British species and the most likely locality is the limestone district in North-east Yorkshire where *Anemone pulsatilla* still grows wild. It may be extinct or it may still be there awaiting some enterprising entomologist, who is willing to explore comparatively unworked ground.

Nomenclature of the yellow forms of *Pieris napi* Linnaeus. A Plea for Reason

By J. ANTONY THOMPSON, M.A.

Some confusion has arisen in the nomenclature of the varietal forms of *Pieris napi* L. and one point particularly should have immediate attention. This concerns the correct name for the yellow form originally established by H. W. Head, which now figures largely in all collections. In order to determine the correct name for this form two premises must be accepted, namely:—

1. The purpose of the name is to denote the *colour* form only. Genetically, any type or series of markings can occur in combination with any colour, and authors who would assign names to "combination vars." would reduce systematics to a farce. There are at least twenty separate forms of marking aberrations, and half a dozen or more—or less—may occur in combination. It is therefore obvious that the number of possible alternative combinations is astronomical and certain specimens may show any number of different forms of named variations. The only exception to this generalization might occur in the case of a certain local community which was sufficiently differentiated to rank as a sub-species.

2. So far as our present knowledge extends there are only three colour forms of *napi*. These comprise the nominotypical white and two forms which have been described by almost every name under the sun but which, for present purposes, I intend to refer to as A and B. These two are:—

A. A bright true yellow which is, of course, Head's form. This form can be distinguished at once by the fact that the underside of the discal area of the forewings is yellow whereas in form *B* it is white. This form occurs in both sexes and is a simple recessive.

B. A 'yellow' form of which nearly all known specimens are actually buff or coppery. In this form the discal area on the underside of the forewings is white and never yellow as in form A. It occurs in the female only and its inheritance might be described as a sex-limited dominant inasmuch as form *B* does not appear to be an allelomorph of the other two colours but can be imposed upon them in the nature of a suffusion. This suffusion varies in intensity, being apparently cumulative until, in the case of its superimposition over white butterflies, the specimen appears entirely buff on the upperside but is in fact a white butterfly with a very high dosage of form *B* genes. It is noteworthy that however heavily the buff is superimposed on the yellow form A, the discal area of the underside of the forewings remains yellow, as form *B* is only effective on the upperside. The correct name for this form may well be *flava* Kane 1893, for although Kane was obviously wrong in confusing it with Schoyen's *sulphurea*, his excellent coloured figure of his *flava*, fig. 6, showing as it does the white on the underside, leaves no room for doubt that he is referring to my form *B*.

It is with the name for form A (Head's strain) that I am primarily concerned in this paper. Carpenter and Hobby 1937 undertook considerable work on this subject and came to a conclusion against which I must protest. They make it clear that the earliest name given to a yellow *napi* with, apparently, the discal area of the underside of the forewings yellow, is *sulphurea* Schoyen 1885; but at the end of their article they jettison this name for two reasons neither of which can, in the light of our present knowledge, be justified. These two reasons are: (i) Schoyen, in the description of his type, refers to the butterfly as being "sulphur yellow," a translation from the Swedish via a French reprint (*jaune soufre*) which has been accepted by all entomologists including Carpenter and Hobby. These authors, however, then decided that Head's butterflies cannot be described as "sulphur" yellow and with this I most strongly disagree. If anyone will compare the yellow form A either with flowers of sulphur or with block sulphur he will find that the similarity is immediate and obvious. I can only imagine that the specimens in the Hope collection, to which Carpenter and Hobby refer, had become either damp or faded, to both of which mischances this form is particularly subject and reacts violently.

(ii) The second reason advanced by Carpenter and Hobby for discarding the name *sulphurea* is that Schoyen's type is a butterfly of what is called the "second generation." Jarvis 1943 and others have shown that there are two forms (not generations) of many butterflies, one of which is *napi*, which are inherited. The first of these two forms are insects which undergo no diapause and which, in suitable environment, continue to feed and to emerge without cessation all through the year. The second form undergoes a period of arrested development in the pupa, and no matter how much this form is forced nothing will induce it to become continuously brooded. Both forms may occur in the same brood, pupae from spring eggs producing in summer a certain

proportion of imagines, the remainder, under similar conditions, overwintering as pupae. Alternatively, broods can be composed wholly of either one of the two forms.

The continuously brooded form produces markings which are bolder and blacker than those which undergo diapause, and it is interesting to note that insects with an inherited pupal delay will not emerge until July or August and will then show markings similar to imagines which are often referred to as the "spring brood." This form is usually accepted as the nominotypical one and the continuously brooded form is referred to as var. *napaeae* Esper—though I do not vouch for the validity of this name.

So unless one is prepared to admit separate varietal names for each butterfly which shows any one of x combinations of y aberrations or z varieties (!) there is no reason why Schoyen's name should be discarded on the grounds that it was a specimen of the so-called "second brood"; for both yellow forms *A* and *B* occur indiscriminately in combinations with both the continuously brooded form and the form with an inherited diapause. I have not so far been able to inspect Schoyen's type, but must point out that adoption by Carpenter and Hobby of the name *hibernica* Schmidt 1913 for my form *A* cannot be accepted for several reasons. There is, for instance, another name, which Carpenter and Hobby have overlooked and to which my attention has been drawn by Mr. A. L. Goodson of Tring, that of *flava* Cockerell 1889. Mr. Goodson has sent me a copy of Cockerell's type which is at Tring, and this would certainly appear to be the same form as Head's, because the discal area of the forewings on the underside is yellow. It would therefore seem that if there has been any misunderstanding about Schoyen's type the name would be *flava* Cockerell, which would of course incur the discovery of a new name for my form *B*—*flava* Kane.

Another reason why I consider that the name *hibernica* Schmidt cannot be accepted is the account of breeding experiments with this form which the author described as having been made by himself. These experiments show clearly that if Schmidt's figures of his own experiment are to be believed, the butterflies were of no form of *napi* which has ever been discovered before or since. Certainly they could not be the form under discussion to which Carpenter and Hobby have given Schmidt's name. I can only surmise that there has been some incredible mistake in Schmidt's own figures or else that he was fortunate enough to have received from Ireland a strain of unique insects!

I therefore consider that in the light of our present knowledge and until Schoyen's type has been subjected to a careful scrutiny the name *sulphurea* Schoyen is the correct one for the offspring bred for many years from Head's original Donegal female and to which I have referred above as the yellow form *A* and that the reasons for discarding this prior name in favour of *hibernica* Schmidt can in no way hold good. If we are to insist on genetic proof of the validity of a form the best name would seem to be *citrona* Frohawk 1928, which has been genetically proved. Even if Schoyen's type—or Cockerell's—is found to be phenotypically correct, it is now impossible to prove (especially in view of the modification of colour to which this form is subject with the passage of time) whether either of these two butterflies was in fact the well-known recessive form of to-day or whether it might have been

some other aberration—or even artefact—of which no further captures have been made.

On the whole I suggest that for the time being these butterflies be referred to as *sulphurea* Schoyen, with *flava* Cockerell and *citrona* Frohawk as synonyms.

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On the possibility of an attitude adopted by Larvae of the Brimstone Butterfly (*Gonepteryx rhamni* L.) being one of defence

By DESMOND LANKTREE, F.R.E.S.

There is an attitude taken up by larvae of the Brimstone butterfly when not feeding known as the resting position, in which the anterior portion of the body is held aloof from the object to which the larva clings with its prolegs. A caterpillar in this well known and frequently adopted position appears in a photograph by Mr. S. Beaufoy reproduced on page 116 of his book *Butterfly Lives*.

There is another pose, however, to which I have seen no reference in print and which I feel may, even if observed, have escaped comment by breeders of the larvae, as it is apparently adopted only under certain conditions which may not normally present themselves in the breeding cage. That the position is not of freakish occurrence is borne out by the facts that seven larvae which I had under observation this year (1951) all adopted the position on different occasions throughout two instars, and that the position is not only maintained for some time after initial stimulus, but only, apparently, under some strain by the larva. Observation, unfortunately, ceased at about the time of the second ecdysis due to loss of the small brood in an accident.

I first raised a brood of this species from ova to imagines during 1950, and giving only the minimum attention necessary for its welfare saw nothing of the particular pose with which this paper is concerned. It is even possible that it may never have been adopted due to the brood being reared in cages in which, for one thing, the air was comparatively still.

This year, the larvae were placed on sprays of *Rhamnus frangula* which stood in a small jug on the sill of an open window, and they were thus subjected freely to all changes in conditions affecting the vicinity. One evening, not long after their emergence from ova, I was surprised to see two of the larvae adopting an attitude which did not seem at all natural or in keeping with their kind of physical construction. That two of them should adopt the attitude on one leaf while the remainder were in normal positions on other leaves furthered my curiosity, so observation with a high-powered lens was subsequently kept, and the position seen to be taken up a number of times by all specimens.

In this attitude, the larva retains its hold with the third, fourth, and fifth proleg-pairs, the third pair being strained forwards from planta upwards. The first and second pairs of prolegs are flattened against the body which rises steeply for some way from the somite bearing the third pair of claspers. The anterior region of the body is arched ventrally inwards with the head tucked in against the thoracic legs, all three pairs of which contact each other. The towering of the body from the region of the third prolegs does not seem to require undue effort, as there is little tendency for wavering or dropping in elevation unless intended. That considerable effort is called for to retain the "curl," is suggested by the apparent tendency of the curl to slacken and the larva's repeated attempts to increase its tightness.

Having established to my own satisfaction that the posture was one repeatedly assumed by different specimens, and apparently only with some effort, I sought for a possible motive.

While certain Geometrid larvae disturbed in motion might "freeze" in a posture approaching the one being discussed, there could be no reason for emulation of an incidental pose by these *G. rhamni* larvae, besides, both Geometrid larvae and those of *G. rhamni* already derive power of protection from close resemblance to their individual food-plants in their respective ways.

The possibility in this abundant and well-known member of the Pieridae of the arched body assisting in the release of an obnoxious secretion from some unannounced gland or glands seemed remote, and in doing so, provided me with the idea which I believe might well be the reason for the posture.

It occurred to me that such a secretion might not need to take place if simulation of the actual process as enacted by some other insect were sufficiently good; and there is, indeed, a striking resemblance between the *G. rhamni* posture and that of certain sawfly (Tenthredinidae) larvae. The late Dr. Imms, in discussing the sawfly larvae of *Croesus septentrionalis* and *Claudius viminalis* (*Insect Natural History*, pp. 194-195), has referred to the unpleasant odour emitted by a glandular secretion; he described how, in the case of *C. septentrionalis*, the body is brought forward over the head when alarmed and the ventral secretory organs discharge, the resulting disagreeable odour permeating the rest of the company in this gregarious species. He also referred to the late Sir Edward B. Poulton's statement of it acting as an effective protection. In the same work, opposite page 222, there is a colour plate depicting one out of five larvae of *C. septentrionalis* on poplar, supported on its thoracic legs, its posterior abdominal segments held aloft, in an inverted "U" position very similar (but, of course, in complete reverse), to the attitude adopted by the *G. rhamni* larvae. Further reference to these defence organs with their varied location may be found in Dr. Imms' *General Textbook of Entomology* (p. 568).

Another point which adds to the similarity in postures is that the *G. rhamni* larvae, when in this attitude, are capable of taking, and sometimes do take a backward step now and then, just as sawfly larvae might quite easily advance on their thoracic legs.

The points of similarity so far discussed between the attitudes of these two types of insect have been dependent on shape and movement, but there are other points which do not fit in so well with the suggestion, chiefly in relation to colour.

First of all, there is a tendency for the anal regions of some saw-fly larvae to be of a lighter or brighter colour than most of the rest of their bodies; in this much only, *G. rhamni* still manages to achieve further slight resemblance, even if incidental. The raised anterior portion of the body in *rhamni* would have to correspond to the raised posterior region of the sawfly larva, and in *rhamni*, due to compression by severe curvature, the blood is forced back to render the anterior region a little paler than the rest of the body, which bears slightly increased blood pressure. After this, colour resemblance largely ceases.

It is characteristic of repellent insects to possess and flaunt a warning colouration, bright in shade and bold in pattern; to live openly, often gregariously, and characteristic of mimics to possess similar colours and habits and often to live with (though in lesser numbers than), their models. If then these *rhamni* larvae ape the defensive attitude of another insect, they also lack any warning colouration; that to reveal the whereabouts of a considerable number on a small buckthorn tree demands the most systematic searching even from practised eyes, only testifies to the excellence of the protective colouration.

My own attempts at persuading the larva to take up the position were unsuccessful. Gentle provocation with a single hair from a camel-hair brush produced only normal gestures, as of annoyance or irritation. Considerable variation in blowing on my part likewise failed to produce the desired reaction, and I also noticed that many natural variations of air movement from wind or breeze produced no visible response of relevance here. Despite my own failure in the matter, the possibility of variable air motion being in some way connected with the cause of response should not, I feel, be altogether ruled out.

The type of stimulus eliciting the reaction described above and its possible source and manner of production in a state of nature have yet to be determined, and, though nothing adverse to the possibility is foreseen, it has not so far been ascertained whether the posture is assumed by the *rhamni* larvae after the second stadium.

Abraxas sylvata Scop. in Derbyshire

By J. H. JOHNSON.

In the autumn of 1934 an old entomological friend told me of a wood where I could obtain the pupae of *Abraxas sylvata* Scop. (*ulmata* Fab.). He said that he had found seventy there in the winter of 1933 and indicated the exact place where I should search. On 3rd January 1935 I went there, and, following the instructions of my collecting manuals began digging at the base of the first tree on the edge of the wood. My beginner's luck brought me two *sylvata* pupae in the first few minutes, but I found only four more by digging round the bases of the next twenty trees. I concluded that mice or moles had beaten me to it and determined to dig earlier the following winter.

I noted that the six pupae which the mice had missed were buried close to the trunk, about half an inch to one inch below the surface, among the leaf-mould which they resembled in colour and not in the clay sub-soil. I then turned my attention to the moss which grew in the trunks of mature specimens of *Ulmus glabra* Huds. (*montana* Stokes), as instructed by my friend, and in a very short time, by carefully pulling to pieces and searching every bit of the moss, I found fifteen more *sylvata* pupae

nestling in little hollows in the moss, or in crevices in the bark on which the moss grew. All these pupae were found less than nine inches from the ground.

The following May the plants under the trees, and even the ground, were spattered with hundreds of *A. sylvata* imagines, both pale and dark varieties, and it was a simple task to select as many as were needed, so that I was not disappointed to find that all but two of my collected pupae were victims of a dipterous maggot which issued from a hole in the side of its host and then constructed a dark reddish brown puparium.

At that time I did not realise I had witnessed one of *sylvata*'s years of plenty; I believed that every season the moth could be found in hundreds; so I dismissed it as extremely common. After the War I needed *sylvata* again, so I returned to the same locality in 1947. Every elm tree was searched thoroughly without success. Throughout the summer of 1948 I observed only eight imagines at rest in the neighbourhood of one elm tree where in 1935 I had seen hundreds. In 1949 and 1950 I saw no more than fifteen and twenty respectively. On 20th June 1951 I observed fifteen imagines, but in September larvae were abundant on one tree and one tree only. The easiest way to find the larva is to tap the branch; they then "bale out" and are easily seen as they hang by their threads.

I had now begun to suspect that *sylvata* is attached to one tree only in the woods, so the other day, out of curiosity, I began to search the thick moss growing on a rotting birch branch lying on the ground several yards away from the trunk of the favoured wych elm tree and in an area of about two square feet I found four *sylvata* pupae in little hollows in the bark under the moss. I dug round the base of this tree and several neighbouring ones, but found no more pupae.

Although *Ulmus glabra* Huds. is common in this district, there is no other colony of *sylvata* to my knowledge. The ecological limiting factors of this species might afford a valuable investigation, especially when contrasted with the abundance and ubiquity of the closely related species *A. grossulariata*.

It was interesting to find, in December 1951, in the moss near to the *sylvata* pupae a fine large specimen of a hibernating oak shield bug, of the same species as one which I found there in 1935. In my youthful enthusiasm I had made a sketch and description of it in my diary.

This locality is an extremely damp and shady one. Alders are interspersed among the elms, oaks and sycamores. Elderberry, hazel, bramble, honeysuckle, and bracken give a jungle-like appearance. The flowering plants which flourish round about the favoured tree are mainly *Sanicula europaea* L., *Lamium galeobdolon* Crantz, *Lysimachia nummularia* L. and *Anemone nemorosa* L. Where the yellow subsoil shows between these plants mosses, liverworts and "fairly fingers fungus" find nourishment.

In 1944 I came across a similar locality in a wood near Helmsley, Yorkshire, and there I found *A. sylvata* in company with *Parasemia plantaginis* L. I was also delighted to find in the same place a few plants of *Paris quadrifolia* L. The sight of these three helped to make some gruelling infantry exercises entertaining. I had no facilities for note-taking, but I believe I could find the spot again. However, I am more anxious to find another locality within a few miles of the one I already have under observation, in order to compare them more accurately.

Some Microlepidoptera Records from the North-West

By Dr. NEVILLE L. BIRKETT.

Recently while re-arranging some of my micro-lepidoptera I realised there was a number of species collected over the last few years which warranted recording. These species are those usually considered scarce or even absent in the area. The fauna of an area is not a static entity and hence what one generation of entomologists considered scarce or absent may to the next be quite commonplace. With such a thought as this I believe it makes even the mere recording of species in an area a worth-while job.

The area at present under consideration may be considered my 'home ground' and comprises parts of three counties, viz.:—North Lancashire, South Westmorland and a small part of South Cumberland. Much of it has been well-worked but much still remains to be done especially in the less studied orders.

The nomenclature and order are those of Meyrick's *Revised Handbook of British Lepidoptera*, 1927. Indications of scarcity or otherwise are taken from two principal sources: up to 1939 Ellis's *Lepidopterous Fauna of Lancashire and Cheshire* revised by Wm. Mansbridge is reliable and after that date the annual reports issued by the Lancashire and Cheshire Fauna Committee are invaluable.

Dioryctria abietella Fab.: I bred a specimen of this attractive moth from Meathop Moss on 8th June 1950.

Homoeosoma binaevella Hübn.: This has always been considered scarce or very rare but my experience is that it is widespread though not common. I have records from Ulverston, Witherslack and Kendal.

Eurrhodope marmorea Haw.: Three specimens came to light at Witherslack on 5.viii.1950.

Cryptoblabes bistriga Haw.: I have taken single specimens of this in 1946 and 1947 at Greenodd, N. Lancs.

Crambus margaritellus Hübn.: Though this species is common on the moss-lands of this area it is not often seen away from them. I took a specimen in my light-trap in Kendal on 15.vii.1950.

Crambus salinellus Tutt.: Again wanderers turned up in my garden on 15.vii.1950 and 10.vii.1951. This is some five or six miles from known habitats on the Kent estuary at the head of Morecambe Bay.

Chilo phragmitellus Hübn.: This has generally been considered rare in this district but I have taken it in a number of widely separated localities:—Greenodd, Holker Moss and Silverdale for example.

Schoenobius forficellus Thunb.: I took a specimen at Bouth near Greenodd on 14.vii.39. The species is not likely to have been overlooked and I have never seen it again.

Nymphula stagnata Don.: This is common in marshy areas of the Kendal District but absent on the extensive limestone areas of the district.

Pyralis costalis Fab.: Two specimens taken in my own garden on 12.vii.1951 and 17.vii.1951 are a recent acquisition to our fauna. This species like so many at the present time is vastly extending its known range.

Exapate congelatella Clerck.: This species was frequent in late September and October in my own garden this year. I have never taken it in this area before nor can I find any really near local records.

Cnephasia bellana Curt.: There have been one or two fairly recent records of this species from Carboniferous formations in the area so that I was hardly surprised when I took two specimens at light near Kendal on 4.viii.1949. (v. L. and C. Fauna Report, No. 26.)

Eucosma ophthalmicana Hübn.: Aspen is a very local plant in this district and in consequence the occurrence of this moth is also irregular. I bred a single specimen from the Witherslack area on 23.viii.41.

Laspeyresia aurana Fab.: Not often recorded but the species is quite frequently to be found sitting on flower heads of *Umbelliferae* bordering the moss-lands in mid-July.

Gelechia diffinis Haw.: This species was frequent to light in my own garden in early July 1951.

Brachmia rufescens Haw.: Not previously reported from the North Lancashire area; a single specimen came to my lights near Silverdale on 8.viii.1951.

Limnoecia phragmitella Stt.: In 1932 the late A. E. Wright of Grange-over-Sands was able to report having seen typical workings of this species in Reed-mace at a locality near Silverdale. I do not know exactly his locality but I took a rather worn specimen of this moth near Silverdale on 30.viii.1951, thus confirming the species' occurrence.

Mompha raschkiella Zell.: A single specimen at Meathop Moss on 11.vi.1950.

Mompha ochraceella Hübn.: A specimen of this scarce species came to light at Kendal on 7.vii.1950. There are only one or two previous records for the area.

Depressaria nervosa Haw.: Taken at Kendal on 5.ix.1951.

Elachista cerusella Hübn.: Common by the river at Newby Bridge. I have only taken one specimen at Kendal.

Argyresthia andereggiella Dup.: I have only taken one specimen of this species—at Ulverston on 7.vii.1945.

Argyresthia glaucinella Zell.: On 18th June 1946 this species was abundant running about on the bark of isolated oak trees in part of Roudsea Wood near Greenodd. There is a record for the Preston District but otherwise I can find no previous record for the area.

Coleophora spissicornis Haw.: Frequent to light in the Witherslack area in late June or early July.

Coleophora anatipennella Hübn.: I bred a specimen from a case found on sallow at Silecroft, Cumberland. So far as I know this constitutes a county record.

Gracilaria phasianipennella Hübn.: Cones were found commonly on *Polygonum* sp. on the edge of Meathop Moss in September 1951. From these a good series of the moth was bred.

Cataplecta fulviguttella Zell.: Very common on *Umbelliferae* by the side of Windermere in 1949.

Orthotaelia sparganella Thunb.: I took a specimen of this pretty moth in my Kendal garden on 2.viii.1950. So far as I know there is no previous Westmorland record and the nearest other noted occurrence was at Cark-in-Cartmel in 1937.

Monopis ferruginella Hübn.: Not recorded from this area since before 1890. I was pleased to take a specimen at Witherslack on 1.vii.1950.

Lampronia oehlmanniella Treits.: Usually uncommon. I have specimens from Holker Moss 6.vi.1947, and Winster (Lancs.) 3.vi.1948

Kendal, 6.xii.1951.

Notes on Microlepidoptera

By H. C. HUGGINS.

Collectors working birch trunks at Aviemore and other Scottish localities for *nubeculosa* at the end of March and beginning of April should be on the look-out for hibernated specimens of *Peronea niveana* Fab. In 1923 I arranged for the late L. G. Esson, the Scottish professional collector, to send me alive any Tortrices he found whilst looking for the Rannoch Sprawler. He sent me about a dozen; these included two *niveana*, one *rufana* Schiff. (*autumnana* Hub.) and one *hastiana* Linn., the rest being *ferrugana* Schiff. Unfortunately both the *niveana* were males; the late W. H. B. Fletcher was, however, more lucky about thirty years before and by sleeving a fertile female on a young birch tree succeeded in rearing a brood. This must have been of considerable size as he had enough to give to his friends, half a dozen of which eventually came into my possession.

Teazle heads should now be collected for the larvae of *Endothenia gentianana* Hub. and *Phalonia roseana* Haw. The big white larva of *gentianana* hollows out the central pith, one in each head, whilst the little green larva of *roseana* burrows transversely through the seeds. Both pupate in the seed-head and are easy to rear if the heads are kept exposed to all weathers. I have noticed, however, a slight tendency on the part of *roseana* larvae to dry up if brought indoors too early, so recommend they be kept outside till the last week in May. In Kent I never examined a teazle plant without finding both these species, but here in Essex they are much more local and only found in a few places.

Pammene fimbriana Haw. is on the wing towards the end of March. With these spring insects no date is reliable, so that it will perhaps be best to say it usually occurs at the same time as *Brephos parthenias* Linn. The flight of this elusive little moth is entirely dependent on the weather. Many suggestions have been made for taking it, apart from breeding it from oak galls, most of which merely prove exasperating. Beating the lower boughs of oaks or kicking the trunks of young trees on a dull day cause it to drop to the ground, but if the small dark moth is seen falling it is rarely recovered. The late W. G. Sheldon told me he beat it into an umbrella in Worth Forest, but attempts I have made in Kent and Essex have only produced earwigs and other unwanted trash.

However, on a still sunny day it flies freely amongst young oaks and is then conspicuous from the white colour of its underwings; but it is very particular about the exact climatic conditions it requires for flight.

On Easter Saturday 1941 I was walking in a wood near here when a moth buzzed past which I caught in my hat; it proved to be *fimbriana*. In the course of an hour I saw about a score; I had only one other box with me, which I filled. The next day I revisited the locality; it was a still sunny day again, but the temperature had fallen several degrees. I beat out four, which flew towards the ground, and I caught two. The next day (Easter Monday) was cold and dull and I saw none and could not beat any either. Since then I have several times seen it in woods at Benfleet and Eastwood, but only on still, sunny, and warm days.

In 1922 I bred an insect from stems of *Stachys palustris* collected near Sittingbourne which the late Mr. W. G. Sheldon identified as *Endothenia fuligana* Hub. (*carbonana* Barrett) and I recorded it as such. Of recent years I have doubted this identification and on looking at it critically I am satisfied it is only an aberration of *E. nigricostana* Haw. in which the usual buff spot is dirty grey. Anyone compiling a Kentish list should therefore omit this record. I have never seen a Kentish *fuligana*, though I believe Purdey is said to have taken it.

Current Notes

LOCAL LISTS.—Our readers will have read with interest Mr. MacLaurin's *Lepidoptera in Renfrewshire*, printed at pages 130-132 of our last volume. Lists such as this are of considerable value to-day; for many lepidopterous habitats were destroyed by the exigencies of the late war; consequently insect populations, and indeed the actual existence of certain species in certain districts, are no longer as they were in 1939. We should welcome similar lists from other Scottish counties. Will our northern readers please take note?

In our excerpts from the *Record* of Fifty Years Ago which we printed at page 64 of our last issue there is a Note by our Founder on the numbers of *Hydrous piceus* L. attracted by the electric street lamps in Turin. Have any of our readers who use the m.v. lamp for attracting moths taken this fine beetle by this means?

We are in need of paragraphs for our "Practical Hints" page and would be very grateful if some of our readers who have had many years' experience in the field would come to our aid. Paragraphs should be applicable to field work during the thirty days following the 15th of each month and should be from 50 to 100 words in length. We know that these paragraphs are much appreciated, especially by our younger readers.

We shall be glad if the Secretaries of provincial Natural History Societies will call our attention (by sending reprints or review copies) to matters of entomological interest which appear in the pages of their Transactions and Proceedings. These should be sent to Mr. D. F. OWEN, Edward Grey Institute of Field Ornithology, Department of Zoological Field Studies, Botanic Garden, Oxford.

Will those of our supporters who have not yet paid their subscriptions for this year or half-year please do so at once? Thereby they will save our Treasurer (a) time, (b) clerical assistance, (c) notepaper and envelopes, (d) postage stamps.

Notes and Observations

PLUSIA CONFUSA STEPHENS 1850 (GUTTA GUENÉE 1852) IN ENGLAND.—The discovery (*Ent. Rec.*, 63: 281) of the first specimen of this species in England is of much importance, because this moth is clearly extending its territory in the North-West of Europe. In 1934 the first specimen was observed in Holland, followed by two in 1945. In 1949 six were taken, and in 1950 no less than eighteen. In 1951 it was again met with though I do not yet know the number, not having received the immigration schedules. In 1949-1951 *Plusia confusa* was repeatedly taken in the same localities, so that very probably it is indigenous there now. There are three generations a year with us.—B. J. LEMPKE, Oude Yselstraat 12iii, Amsterdam—Z.2.

FEMALE ARCTIA CAIA L. ATTRACTING OTHER ARCTIINAE.—The note by D. Wright in the *Ent. Record* (January 1952, p. 24) reminds me of an occasion when I placed two virgin ♀♀ of *Arctia caia* L. in a muslin cage with hopes of attracting ♂♂ for inspection. Next day I was surprised to find, in addition to several ♂ *caia*, a ♂ *Phragmatobia fuliginosa* L. clinging to the muslin. The nearest locality for the latter is Sutton Park, nearly two miles away, where this insect is by no means common.—L. J. EVANS, 73 Warren Hill Road, Birmingham, 23. 25.i.52.

LITHOPHANE LAPIDEA HÜBNER IN BRITAIN.—A female of *Lithophane lapidea* Hübner, taken by Dr. K. G. Blair at electric light at Freshwater, Isle of Wight, on 26th October 1951, was shown at a meeting of the Royal Entomological Society on 27th February 1952. It was in slightly worn condition. The species, grey with four thin black longitudinal streaks, is found in S. France, Switzerland, Italy, Crete, the Balkans, and Spain and as far east as W. Turkestan. The larva, green with white longitudinal dorsal and subspiracular lines, a white oblique lateral stripe on each somite, and a red spot surrounding each spiracle, feeds on *Juniperus* and *Cupressus*. This is the first recorded British specimen.

PSEUDOIPS PRASINANA L. (BICOLORANA FUESS.) IN LONDON.—With reference to Mr. WAKELY's Note at page 21 regarding *Pseudoips prasinana* L. (*bicolorana* Fuess.) it is perhaps of interest to record the finding of a specimen of this moth at light in Regent's Park Barracks on 10th July 1945 at a spot separated from the Park by two rows of large buildings and Albany Street.—W. E. MINNION, 40 Cannonbury Avenue, Pinner, Middx. 14.i.52.

ADOXOPHYES ORANA IN KENT.—I wish to report the presence of this insect in my garden at Bromley, Kent, which brings its known distribution pretty well up to the London area.

This little Tortricid came to my lighted window during August, to be ignored as I had too much on hand to take particular note of it.

However, on harvesting my apples, I found ample evidence of larvae in the characteristic gnawing of the apple peel where two fruits touched one another.

While on the subject of apples, it might be of interest to record that this year, for the first time, I have found larvae of *Hofmannophila* (*Borkhausenia*) *pseudospretella* also eating apple peel where fruits stored in the dark touched the shelf. So far this damage has not shown signs of encouraging decay in the apples as does the eating of *A. orana*, but it is probable that if not used as soon as possible, these apples will go bad.—S. N. A. JACOBS, 54 Hayes Lane, Bromley, Kent.

HADENA ANDALUSICA STAUD. IN THE WEST COUNTRY.—Mr. SAVAGE wrote in last December's *Récord* (63: 302) of finding larvae of this species in the West Country at the roots of sea campion. At the end of August 1938, in company with the late John Bowes, I spent several fruitless hours searching this foodplant at Mullion. I left John there still searching and moved to Prawle, where the sea campion was still innocent of *andalusica*. Presently he followed me in great glee, with a fine lot of the desired larvae which he had found at the roots of sea spurrey. Given the right foodplant we were able to find them readily at Prawle too. Breeding was easy enough; two or three inches of earth at the bottom of a 7-lb. biscuit tin, with a few good roots on the surface, and the larvae were very happy. Do they always prefer sea spurrey if they can get it? The only printed mention of it known to me is in Allan's *Larval Foodplants*, 1949.—J. O. T. HOWARD, 11 Grafton Street, London, W.1. 18.i.52.

PIERIS NAPI ON WET MUD.—Several correspondents have recently recorded instances of *Pieris napi* L. drinking at wet mud and it may be of interest to recall that this habit was recorded nearly fifty years ago by Dr. G. B. Longstaff. In his book *Butterfly Hunting in Many Lands* he writes (page 103): "At Morteheo, on the 1st August 1905, in the early afternoon, I saw fourteen or fifteen *Ganoris napi* sitting close together on wet mud; they were all males." This remark that the specimens were all males bears out Dr. E. BARTON WHITE's observations; Mr. G. E. HYDE has also noted the preponderance of males to females in similar circumstances.—NIGEL T. EASTON, Wisborough Lodge, near Billingshurst, Sussex. 25.i.52.

BUTTERFLIES ON WET MUD.—The Notes on *Pieris napi* L. at wet mud (pages 21, 22) call to mind a note made in July 1945 of *Limenitis camilla* L. in twos and threes on wet mud in an open ride in a wood near here. The butterfly was plentiful and it was most noticeable that while those on bramble blossom or at rest on foliage, etc., appeared to be worn, those on the mud were all fresh. Has this point been mentioned in connection with other species or was it just coincidence?—W. E. MINNION, 40 Cannonbury Avenue, Pinner, Middlesex. 14.i.52.

[The habit of butterflies settling on wet mud and sand has been recorded by many observers from all parts of the world. For instance, Alfred Simson in his book *Travels in the Wilds of Ecuador*, 1886, writes (p. 117): "What most attracted our attention here was the immense numbers of butterflies which flitted and hovered about in the bed of the river and disported themselves on the sand, sucking the water from it

and shaking their wings. In favourite damp spots on the sand they would form small gatherings of fifty to a hundred, densely packed together, so that we could frequently catch fifty or more in the net at a single blow; most were of the genera *Papilio* and *Callidryas*." Again at page 122 the same author writes: "The butterflies on the sands were so numerous and fearless that we quietly knelt down and took them with our fingers."—ED.]

A NOTE ON REARING *HYDRIOMENA RUBERATA* FREYER.—A female of this rather uncommon species which was found at rest on a stone wall on Blackamoor, North Derbyshire, in June 1951 subsequently laid 40 eggs. The eggs were laid on willow leaves in small batches and were pale yellow in colour, darkening before they hatched.

The newly hatched larvae were first placed on a spray of willow contained in a small cylindrical celluloid cage, but they wandered about and most of them left the foodplant. They were then transferred to a glass-topped tin containing a few willow leaves, and they soon disappeared into crevices between leaves that were lying close together. The larvae were not seen again until the leaves were changed some days later, but their presence was indicated by thinned patches on the visible leaf surfaces. Throughout their lives these larvae sought willow leaves which were touching, and creeping between them into the smallest crannies surrounded themselves with cocoon-like structures of silk. Within these they remained very sluggish, and fed slowly upon immediately adjacent foodplant.

When about half grown the larvae were moved from glass-topped tins to a cage made from old photographic half-plates, having a base with a hole through which the stems of the foodplant could dip into a jar of water. Willow sprays were bunched into the cage rather thickly to give plenty of spinning sites for the larvae. Some of them spun their 'cocoon-homes' between willow leaves and the glass sides of the cage, thus allowing perfect observation.

The silken structures were oval in shape with an orifice at one end not much larger than the girth of a larva. The caterpillars remained curled up in their cocoons all day and emerged only at night to feed. They did not usually go far but often merely stretched out from their cocoons to eat any leaf within reach.

Pupation occurred during August. Most of the larvae burrowed under the one-inch layer of leaf-mould provided and spun substantial cocoons in the bottom angles of the cage. A few did not go below ground but spun cocoons in the corners of the cage at various levels. Twenty pupae were obtained, the losses being due not to deaths but to escapes. The larvae can creep through the tiniest cracks and appear to have a flair for finding them.—T. D. FEARNEHOUGH, 13 Salisbury Road, Dronfield, Derbyshire. 9.i.52.

SCARCITY OF BUTTERFLIES ON THE CONTINENT IN 1951.—I have been interested to read of the scarcity of butterflies on the Continent in 1951. In July I spent my honeymoon at Lustin-sur-Meuse in the Province of Namur in the Belgian Ardenne where, as a schoolboy, I had had several butterfly collecting holidays with very good results. It was therefore with surprise that I found butterflies so scarce. This I attributed to the neglect of the woods during the German occupation (von Runstedt's

offensive ended at Celles only a few kilometres away). The woods were certainly very hard to penetrate, but we found a good spot for *Apatura iris* and I captured a few male specimens in a disused pigsty between Dinant and Celles. *Limenitis camilla* was also found there. Just before we left we found a few oak trees on the other side of the Meuse where *Thecla quercus* was very plentiful. On 22nd July I saw one *Melitaea parthenie*. The whites, *Pieris napi*, *rapae* and *brassicae*, were reasonably common. *Vanessa atalanta* and *A. urticae* occurred. *Polygonia c-album* was fairly common. The only Lycaenid seen was *Celastrina argiolus* and of Hesperidae a few specimens of *Ochlodes venata*. *A. hyperantus* occurred but no vars. were taken. *M. jurtina* was very common; I also found two isolated specimens of *M. galathea*. A few weeks after we had left a Belgian whom we had interested sent us a fresh specimen of *P. machaon*, which he had caught at Lustin.—(Rev.) P. C. HAWKER, Gauthy Rectory, Wragby, Lincs. 19.i.52.

ARGYNNIS AGLAIA IN THE ISLE OF MAN.—I have just heard from a friend in the Isle of Man that Ruy Point—the one bit of sea coast that I don't know well—is a new locality for *Argynnis aglaia*.—S. H. KER-SHAW, Alderman's Place, Aspley Heath, Bletchley, Bucks. 6.ii.52.

SUITABLE KILLING AGENTS.—The note by A. M. R. HERON on how to kill *Luceria virens* without destroying the colour appeared in the same issue as the Obituary of my old friend Lt.-Col. Donovan. He taught me a method which I still use exclusively for all insects, and it does not harm the colours of any. I insert three or four drops of chloroform into the pill-box. Then I dip the pin to be used in to a bottle of Formalin and by drawing it out quickly a large drop or drops is left on the pin. This Formalin penetrates the thorax with the pin and is quite lethal.

A little practice is needed to judge that most of the liquid has penetrated with the pin—sometimes it can be left on the top of the thorax, especially if it is very hairy, but observation and practice soon make this a quick and safe method, the best I have tried so far. Formalin is difficult to get and is very poisonous so care is needed. Occasionally, if too large a drop is used on the pin, a few crystals are left on the thorax. These can be brushed off and practice will determine a suitable quantity to use. Several small droplets up the length of the pin are better than one large one.—P. SIVITER SMITH, 21 Melville Hall, Holly Road, Edgbaston, Birmingham, 16.

ACCOUNT OF THE MACROLEPIDOPTERA OF KENT.—I have been at work for a number of years upon a detailed catalogue of the Macrolepidoptera of Kent and I should be very glad to hear from collectors who can supply me with lists of their captures, giving localities and, if possible, dates. I shall be pleased to send a list for filling in to anyone sending me his name and address. On publication proper acknowledgment will be given of the source of all information received.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 21.i.52.

A W. AFRICAN EARWIG IN SCOTLAND.—My father, D. K. Kevan of Edinburgh, recently sent me a specimen of a large species of earwig, remarkable for its very long forceps, which was found in a log of Nigerian Abura at Leith in September 1951. It was identified for me by Mr. W. D. Hincks of the Manchester Museum as *Forcipula gariazzi* Borelli,

and he tells me that although he has had it from Abura and Obeche logs from Nottingham on a previous occasion he knows of no other record of its importation into this country. Incidentally I might add here that although Borelli in his original description of the species (*Boll. Mus. Torino*, 15: 1 (1900)) uses the trivial name in the form given, this must, under the International Code of Zoological Nomenclature, be amended to *gariazzii*, since there is little likelihood of there ever having been a person by the name of Gariazz, whereas Gariazzi is a valid Italian proper name.—D. K. McE. KEVAN, University of Nottingham. 29.xii.51.

[Probably the name was Gariazzi, but unless the author said so no one is entitled to amend *gariazzi* to *gariazzii*. In any case the International Rule is a bad one. Proper names like these do not become Latin names because they are given a Latin termination. What Latin word has zz in the middle?—Ed.]

TETTIGONIA VIRIDISSIMA L. IN EAST DORSET.—The great green grasshopper, *Tettigonia viridissima* L., was swarming in this part of Purbeck last September. I have never met with such numbers before and am wondering if it was equally common all along the South Coast.—LEONARD TATCHELL, Rockleigh Cottage, Swanage. 3.x.51.

DIPTERA

UNUSUAL SEXUAL BEHAVIOUR OF *SCIARA CARBONARIA* Mg.—Males of this species were common, flying around the tips of branches and landing on leaves, on the sheltered, sunny side of some poplar trees in Rothamsted Park on 31st May 1951. A black male *Dolerus* (Hym., Tenthredinidae), hanging by a hind leg from a twig, attracted a number of male *S. carbonaria*, which were seen to land upon it and to take up a mating position, the wings raised and the abdomen turned forward ventrally. At one time an almost continuous stream of males were landing on the sawfly and flying away. Up to four males at a time were seen running over the thorax and abdomen, but only one male was seen to attach itself to the hind end of the abdomen. The sawfly appeared to be dead but actually was alive, although it died in a tube later.

One male *S. carbonaria* was seen to attempt copulation with a female *Dilophus febrilis* L. (Dipt., Bibionidae) walking along a twig, but this species is of about the same size, shape and colour as female *S. carbonaria*, whereas the *Dolerus* was about twice as big, and was motionless.

On the poplars 1 ♂ and 1 ♀ *S. carbonaria* were seen as prey of 2 ♀♀ *Scopeuma stercorarium* L. (Dipt., Cordyluridae), and 3 ♂♂ as prey of 2 ♂♂, 1 ♀ *Platypalpus agilis* Mg. (Dipt., Empididae). Some *Tenthredo* spp. were hunting on the leaves but none was seen to capture prey.

It is probably worth mentioning that the species of *Sciara* was determined as *carbonaria* using Edwards, F. W., 1924, *Trans. R. ent. Soc. Lond.* and Frey, R., 1948, *Notulae Entomologicae*.—B. R. LAURENCE, 31 Sherwood Road, Luton, Beds., 29.i.52.

FLIES AT IVY-BLOOM.—It seemed strange to me to read in Mr. Holloway's paper *Insects and Ivy-bloom* (1951, *Ent. Rec.* 63: 275-7) of

the Crane-fly *Tipula oleracea* L. being "prominent" at the flowers of this plant. Not being addicted to crepuscular or nocturnal wanderings I have never seen crane flies imbibing as I infer from Mr Holloway's article such must be their habit.

The flower has considerable attraction to the usual diurnal diptera haunTERS of yellow flowers being one of the latest to extend a welcome to the thirsty. Among the usual Syrphidae, Tachinidae, Calliphoridae, and Muscidae I have seen on its blossoms:—*Syrphus* [*Episyrphus*] *auricollis* Mg. var. *maculicornis* Zett., *S.* [*E.*] *balteatus* Deg., *S.* [*Syrphidis*] *ribesii* L., *S.* [*S.*] *torvus* O.S., *Syritta pipiens* L., *Eristalis* [*Tubifera*] *tenax* L., *E.* [*T.*] *pertinax* Scop., *Myiatropa florea* L., *Sericomyia* [*Cinxia*] *borealis* Fln. [= *silentis* Harris], *Tachina* [*Larvaevora*] *fera* L., *Phryxe vulgaris* Fln., *Calliphora erythrocephala* Mg., *C. vomitoria* L., *Pollenia rudis* F., *Sarcophaga carnaria* L., *Fannia serena* Fln., *Mesembrina meridiana* L., *Morellia* sp. females, *Musca autumnalis* Deg., *Phaonia variegata* Mg., *Polietes lardaria* F., *Pseudomorellia albolineata* Fln.

Among the less usual have been *Scatophaga* [*Scopeuma*] *lutaria* F., *S. stercoraria* L., *Dilophus febrilis* L., *Scatopse notata* L. and *S. picea* Mg.

The dung and fungus haunter *Dryomyza flaveola* F. var. *zawadskii* Schum. was quite an unexpected visitor. The small Empid fly *Platypalpus minutus* Mg. was once seen at the nectar instead of running over the leaves as usual waiting for small insects. The most exciting was my first capture of the Conopid *Leopoldius signatus* Wied.

Alas, I have no handy patch to watch. Perhaps some more favoured person will make further observations, distinguishing between the imbibers and the pollen-eaters.—L. PARMENTER, 94, Fairlands Avenue, Thornton Heath, Surrey. 28.xii.51.

A NOTE ON PALLOPTERA AMBUSTA Mg. AND OTHER SPECIES OF PALLOPTERIDAE.—Mr. J. E. Collin, in a recently published paper on the family Pallopteridae (*Ent. Rec.*, May 1951, Suppl. 1-6) describes *P. ambusta* as rare in Britain, recording it from only Herefordshire, and states that it appears to be principally confined to mountainous districts on the Continent. Mr L. Parmenter, in a note on species of this family (*Ent. Rec.* 63: 304-306), does not refer to *ambusta* at all, which appears further to substantiate its rarity in this country. It is, therefore, interesting to note that *ambusta* was, up to eighteen months ago, taken quite commonly in June and July at Coombe Dingle, near Bristol (Glos.). Its habitat was a nettle-grown hollow formed by the dry bed of a diverted stream, and both sexes were to be seen resting on the uppermost leaves of the nettles growing in the more densely-shaded part of the hollow. Unfortunately, a major drainage scheme between Henbury and Sea Mills almost obliterated this particular spot and *ambusta* was not seen there in the past two seasons. Although much of the low vegetation has re-established itself during the past year, the destruction of the many trees and shrubs which formed the principal growth at this spot has resulted, at least temporarily, in the disappearance from the dell of a number of interesting species.

Parmenter (*ibid.* p. 305) refers to the occurrence of *Palloptera ustulata* Fall. on a window, and of both this species and *P. umbellatarum* F. on the veranda of his house at Thornton Heath, Surrey. During a

short stay at a house at Seal (Kent) in August 1950, both sexes of these two species were noticed in considerable numbers on the windows and ceiling of my bedroom and good series were taken during the four days spent there. The appearance of fresh specimens each morning suggested that these two species were breeding inside the house, but all attempts to discover whether this was actually so were unsuccessful.—E. C. M. D'ASSIS-FONSECA, 18, Grange Park, Henleaze, Bristol.

COLEOPTERA

The Coleoptera of a Suburban Garden

4—Rhynchophora

By A. A. ALLEN, B.Sc., A.R.C.S.

(continued from page 63.)

CURCULIONIDAE

Ceuthorhynchus erysimi F.—This bright little species is somewhat plentiful, especially by sweeping in weedy flower-beds where shepherd's purse (*Capsella Bursa-pastoris*) abounds, through most of the summer; several times found hibernating at roots of mixed herbage, particularly *Arabis* and *Alyssum* (cf. the last species). Some specimens approach the green ab. *chloropterus* Steph.

Ceuthorhynchus floralis Payk.—Distinctly less common; also very fond of *Capsella*, but taken more often than *erysimi* by sweeping other vegetation; not found hibernating, unlike the last-named.

Ceuthorhynchus pyrrhorhynchus Marsh.—Much more seldom met with; 6.vi.51, 24.vii.51, singly by sweeping low plants. Seems chiefly attached to hedge-mustard (*Sisymbrium*), which does not grow in the garden.

Ceuthorhynchus quadridens Panz.—A specimen taken crawling up a cabbage stalk, August 1931; a rather common species on various Cruciferae which one would expect to have recurred.

Ceuthorhynchus pleurostigma Marsh.—One on a cabbage, September 1931; another on golden-rod flowers, July 1949. (This and the preceding species are sometimes injurious to Brassica crops.)

Ceuthorhynchus roberti Gyll. v. *alliariae* Bris.—One example by general sweeping, 5.vi.51. The garlic-mustard (*Alliaria*) grows a little way outside the garden along a hedge and I have taken the beetle on it there.

**Ceuthorhynchus punctiger* Gyll.—Singly by sweeping dandelions and allied Compositae on the edges of vegetable plots; very rare (3.vii.50, 10.vi.51).

Ceuthorhynchus quadrimaculatus L.—This ubiquitous nettle-feeder is not resident, owing to the absence of its host-plant, but a casual specimen was swept from coarse grass near a fence beyond which is a rough field (now largely given over to allotments) where the species has occurred—12.ix.50.

Ceuthorhynchus litura F.—Though there has been no lack of thistles in the garden of late years, the sole example hitherto found is a male taken off flowers of golden-rod in July 1949.

Ceuthorhynchidius troglodytes F.—By sweeping where there is plantain (*Plantago lanceolata*); a few specimens during the past summer are all that have been seen of this very common weevil.

Amalus scortillum Hbst. (= *haemorrhous* Hbst.).—One swept from luxuriant herbage, 28.v.51. The pabulum does not appear to be known.

Rhinoncus pericarpus L.—Found very sparsely by shaking and sweeping dock in May and June last; I took it many years ago with *Apion miniatum* in a lane not far distant. This is the only dock-feeder of which more than one individual has so far turned up in the garden.

Magdalis cerasi L.—On the foliage of plum, cherry, and apple; scarce and only found in June 1950 in company with the following. (It is rather curious that *M. cerasi* should also live on oak.)

Magdalis ruficornis L. (= *pruni* L.).—On the same fruit trees as the latter, with the addition of pear; not common; taken in June 1933 with the next species, and again sparingly in June 1950.

**Magdalis barbicornis* Later.—Exclusively on pear foliage, late May and June; rare as a rule, but in some small numbers when first found in 1933 and again in the last two years; in many of the intervening seasons, though searched for, not seen at all.

Magdalis armigera Geoff.—Several specimens in June 1933 on some young elms not exceeding ten feet high and long since destroyed. Young elms now growing at the opposite end of the garden have proved unproductive. (All our few southern species of this genus have thus occurred in the garden, except the birch-feeding *M. carbonaria* L., rare in the south.)

Euophryum confine Broun.—In some numbers with its early stages in a piece of rotten wood which was probably once part of a fence, April 1951 and subsequently; odd specimens by sweeping nearby. A native of New Zealand now firmly established here in the wild. See *Ent. mon. Mag.*, 1948, **84**: 153, and 1951, **87**: 246.

SCOLYTIDAE

Scolytus scolytus F. (= *destructor* Ol.).—An example was caught flying in the garden many years ago, at a time when there were one or two large elm logs lying in the field beyond. The species is common in the bark of felled elms in the district.

Scolytus rugulosus Ratz.—A solitary specimen beaten off a euonymus hedge, 13.vii.51. This is the only member of the family likely to be breeding in the garden; it may have come from some species of *Prunus*.

Hylesinus fraxini Panz.—One captured on the wing in hot sunshine in spring or early summer, about 1930 (date uncertain). Otherwise I have not seen it in this vicinity; ash trees do not abound.

METOECUS PARADOXUS L.—A specimen of this most interesting beetle was taken at Bookham, Surrey, on 12th August last (1951). It was found by Mr. P. W. E. Currie, and passed on to me later in the day. On first seeing it I showed my lack of knowledge by suggesting it was a sawfly—little knowing that Mr. Currie was an expert on that Order! The insect was rather lively, displayed a fat yellow body and kept unfolding its wings in its efforts to escape. Its shape made me think of a much smaller beetle which I had taken once or twice—*Tomaxia biguttata* Gyl., and on reaching home I looked up that insect in Fowler's Cole-

optera to see if there was a species near which in any way resembled this strange-looking beetle. Its size alone, 10-12 mm., was a valuable clue, and on reading the name *Metoecus paradoxus* and its description there was no doubt in my mind but that this was the name of Mr. Currie's find. According to Fowler, the larva of the beetle feeds on wasp grubs. The eggs are laid in the autumn in crevices of rotten wood, and it was thought the larvae hatch in the spring and attach themselves to wasps visiting posts, etc., to gather material for making their nests and are thus conveyed to the wasp community. It is most probable that much more is known of its life history since Fowler wrote his book, and perhaps some of our readers could enlighten me as to more up-to-date details of its habits. In early September, I visited Bookham again and dug out a wasp nest, hoping to find more, but failed to get any, although numerous diptera larvae present, chiefly in the soil immediately under the nest, may prove interesting if I am successful in rearing them. Presumably the nest must be dug out much earlier. I am sure other readers besides myself would be interested to know if anyone has found the larvae in wasp nests, and in what month they might be sought for.—S. WAKELY, 26 Finsen Road, Ruskin Park, London, S.E.5. 4.i.52.

Fifty Years Ago

(From *The Entomologist's Record* of March 1902)

MISS FOUNTAINE TAKES *COLIAS HELDREICHI*.—To the butterfly collector in Greece *Colias heldreichi* is the one prize before all others. And this butterfly I had been given to understand only occurred on the high and lofty mountains—such as the Parnassus—always above the tree-line, at an elevation never lower than 7,000 ft. Judge therefore of my surprise and delight when one day about the middle of June, not more than a few hundred feet above the village of Soudena, on the lower slopes of Mount Chelmos, as we were riding steadily on, intending to reach the summit, I saw a large dark *Colias* hovering rapidly over the scrub and brushwood; but as I found on consulting my aneroid that it was only an elevation of about 4,000 ft. I was not sufficiently sceptical . . . even then to dismount and catch one, till one of the men who had come up with the horses and was amusing himself by brandishing about my net, suddenly brought for my inspection what I saw at a glance was unmistakably a magnificent female of *Colias heldreichi*. I was soon on my feet and in hot pursuit of every one I saw, which was no easy task over this rock-strewn mountain-side, but the males of this lovely butterfly were flying in every direction, so that I had soon secured several, not to mention another fine female. A day like this is a day to be remembered in the life of an entomologist. It is one which stands out quite distinct, leaving an impression never to be forgotten. The long toilsome climbs of other and less successful days beneath a blazing sun, the long hours of thirst and fatigue, which have so often brought in the end little or no results, are all compensated for in the joys of the one day when the enthusiastic butterfly hunter meets for the first time a treasure such as this, flying everywhere in wild reckless profusion. . . . I have since been told that I am the first British entomologist who has ever taken *Colias heldreichi* or seen it alive; and may I add that it is a sight worth seeing.”—MARGARET FOUNTAINE.

CRICKETS IN COAL MINES.—In visiting the coal mines of Mariemont, in Belgium, at the bottom of the pit, at a depth of 683 metres (about 2,219 ft.) I was very struck to hear the chirp of a cricket. It must have been *Gryllus domesticus*. The song was only to be heard close to the engines near the bottom of the shaft, where they probably collected to obtain the warmth from the steam. There were no signs of them in the galleries or at any distance from the engines. . . . The majority of insects occurring in mines are undoubtedly introduced by the timber; longicorn beetles; *Sirex gigas*, and other wood-borers are not uncommon.—M. BURR.

SWARMING OF PYRAMEIS ATALANTA.—I find you mention the swarming habits of *Satyrus hermione*. Is it generally known that our common *Pyrameis atalanta* occasionally acts in precisely the same manner? I have twice noticed a swarm of these insects roosting on the branches of an oak-tree. I have never seen this habit of *P. atalanta* mentioned in any book on entomology, and should very much like to know the possible reason for the habit.—G. T. LYLE.

ABUNDANCE OF LYTTA VESICATORIA NEAR DOVER.—When in the country near Dover last June, I noticed hundreds of examples of *L. vesicatoria* flying in the hot sun round and settling on the outer leaves of an ash tree. The tips of the outer leaflets all round the tree (which was a large one) were in shreds, eaten by the beetles. The ground underneath the tree was covered with frass, and the air was impregnated by the odour emitted by the beetles, and noticeable some yards away. There were other ash trees in the vicinity, but it was only round this particular one that the beetles seemed to assemble.—H. D. STOCKWELL.

Current Literature

BEEKEEPING AND AGRICULTURAL SPRAYS. By B. A. COOPER (Year-Book of the Lincolnshire Beekeepers' Association, 1950-1).—The use of agricultural spray chemicals for the control of weeds, pests and diseases is proving harmful to honeybees. Various effects of each chemical are discussed under a series of headings, and methods to minimise dangers to bees are suggested. Further research is required in this important economic problem, and the present paper is a useful guide to both beekeepers and farmers.

THE CHEMISTRY AND ACTION OF INSECTICIDES. By H. H. SHEPARD. New York, 1951. McGraw-Hill Book Co., 59s 6d.—A detailed account of the properties of insecticides with a descriptive paragraph on each chemical. Fungicides, rodenticides, and other economic poisons are discussed in connection with their chemical and toxicological relationship to insecticides. Not only are important facts and theories contained in this work, but there is also information of historical and commercial value. Many references are quoted and these are given in full at the end of each chapter.

THE JOURNAL OF ANIMAL ECOLOGY, 20: 63 (1951) has a paper by D. and E. LACK on *Migration of Insects and Birds through a Pyrenean Pass*. In the autumn of 1950 birds, butterflies, one species of dragonfly

and a species of Syrphid were seen migrating through the Pyrenees, going south and west. Most spectacular was a migration against the wind through a pass at 7,500 feet, both birds and insects having apparently been deflected from their standard flight-direction by the mountains. An important comparison between the migrations and emigrations of birds and insects is made.

—, 20: 180. Dr. C. B. WILLIAMS of Rothamsted has a paper on *Seasonal Changes in the Flight Direction of Migrant Butterflies in the British Isles*, an analysis of over a thousand records of directional flights of butterflies in the British Isles, relating to six species, with diagrams on a logarithmic scale representing the number of insects in each flight. *Vanessa atalanta*, *V. urticae*, *Colias croceus* and *C. hyale* show a definite northerly movement in the spring and a southerly movement in the autumn, though the same individuals are obviously not involved. With *Pyrameis cardui* there is a northerly migration in spring, but autumn records do not show a dominant southerly movement. *Pieris brassicae* has two migratory seasons, at the end of May and early June, and again at the end of July and in early August. The first shows evidence of a northerly movement when away from the apparently confusing effects of coastlines, but the second does not show a definite southerly flight. *V. urticae* had not formerly been considered a regular migrant, but the recorded directional flights show a northerly movement until July and south again in autumn. This species requires closer watching as it now seems immigrant as well as resident. Many further observations of a north and south movement are required as the continual accumulation of records by the Insect Immigration Committee support the author's belief that the migration of butterflies will be found to be similar to that of birds and not contradict the fundamental theories of evolution by being unidirectional.

THE SCOTTISH NATURALIST, 63: 33, contains a paper by K. TOD *A New and Unusual Locality for Anarta cordigera Thunb.*, recent observations on an isolated colony of *Anarta cordigera* in Angus with topographical details. A new foodplant, *Vaccinium myrtillus*, is recorded. The colony is the southernmost in Britain and at the lowest altitude (650-800 feet).

THE NATURALIST, No. 839 (Oct.-Dec., 1951), Part VI. Our contributor Mr. H. N. MICHAELIS here prints a comprehensive list of Lepidoptera, including micros, recorded from the Spurn peninsula (Yorkshire).

TRANS. OF THE NORFOLK AND NORWICH NATURALISTS SOCIETY, 17: 84, contains an account, by E. A. ELLIS, of the introduction of *Lycaena dispar batavus* into Norfolk from Woodwalton Fen in 1949, with ecological observations. Sixty butterflies are estimated to have emerged naturally in the open during 1950, and details of avian predators are given.

THE IRISH NATURALIST'S JOURNAL, 10: 105, has a paper by P. P. GRAVES on *The Second Brood of the Holly Blue in Southern Ireland*. Contrary to the usual statement, *Celastrina argiolus* is at least partially double brooded in southern Ireland. It is suggested that only recently has this species become double brooded here.

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Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to F. W. BYERS, 59 Gurney Court Road, St. Albans, Herts.

Urgently required.—One copy of January 1951 issue of "The Entomologist's Record."—L. G. F. Waddington, 8 Lawn Avenue, Doncaster.

Wanted.—Records of *Nymphalis polychloros* in Kent, both old and recent, especially regarding colonies and numbers. Full acknowledgment will be made.—J. M. Chalmers-Hunt, 70 Chestnut Avenue, West Wickham, Kent.

Wanted on loan for critical examination: all available British and Irish material of *Tetrix (Acrydium) vittata* and *bipunctata* (Orthoptera).—D. K. McE. Kevan, School of Agriculture, Sutton Bonington, Loughborough.

Wanted.—Any interesting British or Exotic ova, larvae, or pupae. *For disposal.* Ova of *P. populi*, *B. strataria*, *N. anceps (trepida)*, *M. tiliae*.—T. H. Fox, 28 Borwell Road, Berkhamsted, Herts.

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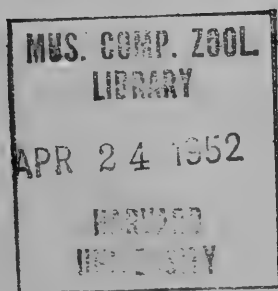
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Aberrations of *Saturnia pavonia* Linnaeus

By E. A. Cockayne, D.M., F.R.C.P.

PLATE IV.

[The following aberrations are in the Rothschild-Cockayne-Kettlewell collection in the British Museum.]

Saturnia pavonia Linnaeus ab. **identata** Schultz. (*Ent. Zeitschr.*, 1909, 23, 37) (Fig. 1).

The specimen, locality unknown, from the S. Stevens, B. W. Adkin, and Cockayne collections agrees with the description given by Schultz. The festooned lines are straight or nearly straight and the pale area between them is nearly double the normal width. The ocellus is also displaced outwards as in ab. *deflexa* Schultz. I think *identata* is probably a misprint for *edentata*, but the spelling is the same both in the text and in the index.

Saturnia pavonia Linnaeus ab. **paradoxa** ab. nov. (Fig. 2).

The area from the base to the white area proximal to the ocellus is dark fuscous on both fore and hindwing; the area between the proximal festooned line and the submarginal line is also dark fuscous on both wings; the subterminal line is dusky and the border is dark; thus the usual pale basal line and the pale festooned line are both absent and the pale median area contrasts strongly with the dark area on either side of it.

Type ♀: Sutton near Birmingham, 5.v.1901, Fountain. (J. W. Grant coll.) Cockayne coll.

Saturnia pavonia Linnaeus ab. **orbifer** ab. nov. (Fig. 3).

The festooned lines are displaced towards the base on both fore and hindwing. On the forewing that part of the inner festooned line near the inner margin approaches the dark transverse band, which lies internal to the ocellus, as in ab. *occlusa* Braun. It then turns outwards from nervure 2 and running towards the apex touches the ocellus, and then turns inwards between nervures 8 and 9, runs along the costa, and joins the broad transverse band internal to the ocellus. It thus forms a complete oval or circle. On each forewing an extra nervure arises from the posterior end of the discocellular nervure and is a duplication of 3. Nervure 7 is missing as in normal *pavonia*. The outer festooned line runs parallel with the inner as far as the carmine red subapical mark and ends there. Both festooned lines are broad and the festoons are less apparent than usual. The ocelli are slightly asymmetrical; both are very large and irregular in shape. The margin of the wing is pale and very broad. On the hindwing the inner festooned line merges with the dark area surrounding the ocellus and swings round towards the costa to join the curved dark line internal to the ocellus. The outer festooned line runs parallel with the inner curving inwards along nervure 6. The white area between the festooned lines is very broad especially towards the costa. The ocelli are asymmetrical and abnormal in shape as the figure shows. The marginal band is pale and broad. On the left hindwing nervure 3 branches into two parts.

Type ♀: Inverness, v.1926, L. W. Newman. (B. W. Adkin coll.) Cockayne coll.

Saturnia pavonia Linnaeus ab. **fusca** ab. nov. (Fig. 4).

The whole of the basal part of the forewing is blackish brown and merges with the dark transverse band internal to the ocellus. With the exception of the white area internal and external to the ocellus the whole of the wing is suffused with fuscous, and the festooned lines are scarcely visible. The inner part of the border is dusky and the outer part blackish brown. With the exception of the white area internal to the ocellus the whole of the hindwing is suffused with fuscous, but all the markings are faintly visible. The border resembles that of the fore wing.

Type ♀: Loc. incog. (Capper coll., Bright coll.) Rothschild coll.

EXPLANATION OF PLATE IV.

Fig. 1. *Saturnia pavonia* ab. *identata* Schultz. ♀.

Fig. 2. *Saturnia pavonia* ab. *paradoxa*. ♀. Type.

Fig. 3. *Saturnia pavonia* ab. *orbifer*. ♀. Type.

Fig. 4. *Saturnia pavonia* ab. *fusca*. ♀. Type.

Hand Pairing of *Papilio machaon* in February

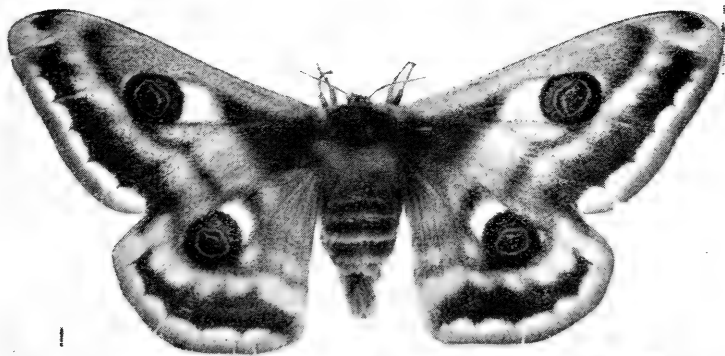
By C. A. CLARKE, M.A., M.D., F.R.C.P.

During the summer of 1951, in a small greenhouse where I had planted fennel profusely, I obtained three 'natural' matings of the Swallow-tail butterfly (Wicken stock). The operation entailed a good deal of work and scrupulous attention to detail. (See *A.E.S. Bulletin*, February 1952). From the pairings fertile eggs were laid and eventually some sixty chrysalids resulted. These are being kept for studies on pupal coloration.

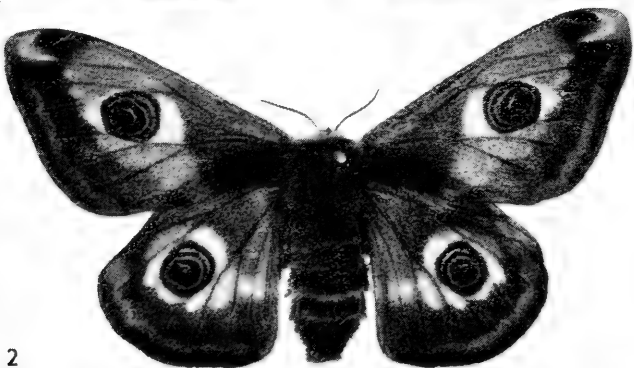
In December 1951, Mr. Valletta of Malta kindly sent me twenty *P. machaon* pupae which he had bred. Without any particular object in view I put them in my incubator at a temperature of 65° F. to see if they could be forced. The butterflies started to emerge intermittently after five weeks and as there was plenty of fresh fennel in the (unheated) greenhouse I decided to try and effect pairings. After emergence, therefore, the butterflies were kept cool in an unheated room until a partner emerged; in this way the insects remained in perfect condition, motionless, for many days without being fed, (the maximum interval was thirteen days). When a couple was obtained they were put back in the incubator for half an hour to warm them up before mating.

Technique of Hand-Mating. (1) This was done at any time of the day in front of a warm fire. The butterflies were held as shown in the diagrams, the male being easily distinguished by the black-edged yellow claspers on the last segment.

(2) When the abdomens had been approximated they were rubbed gently together for a few minutes and this caused the male to open his claspers slightly. Pressure was then applied to both male and female abdomens; this makes the claspers of the male open widely and the female to protrude her genital apparatus. The claspers now embrace the terminal segment of the female, correct positioning being facilitated by slight rotatory movements on the part of the operator. After some minutes 'locking' occurs and moderate tension on the abdomens will not



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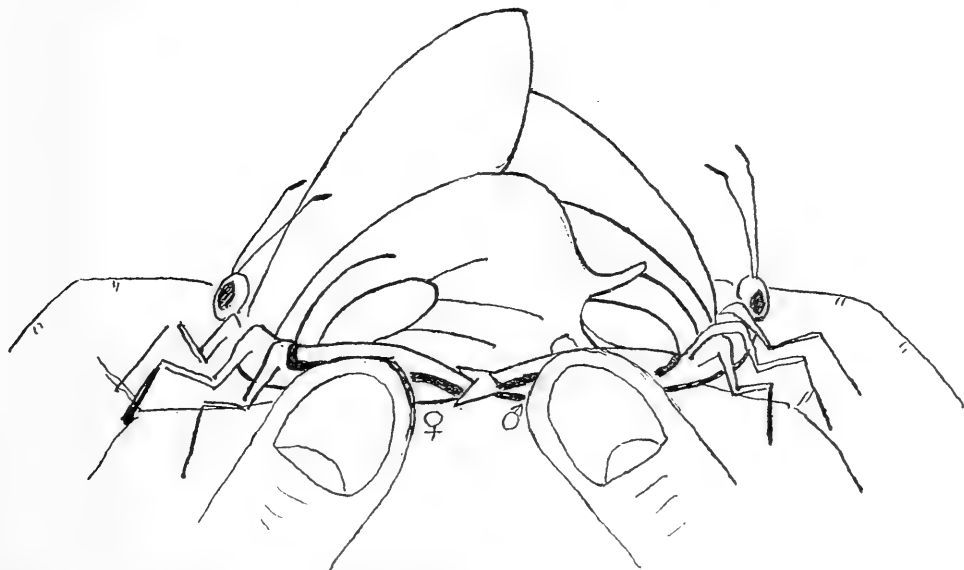
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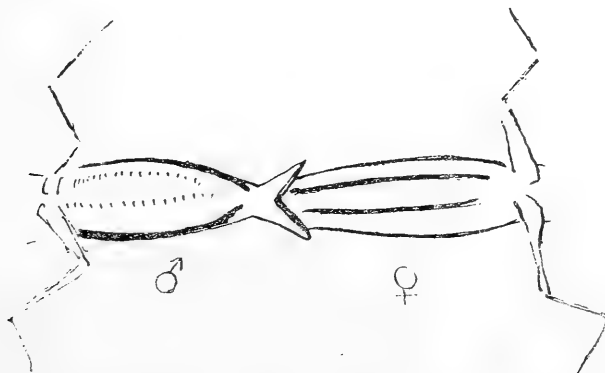
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then cause separation. Simultaneously the head and thorax of the male appear to become lifeless.

The butterflies were then put back in the incubator on to fennel which had been temporarily transplanted and was growing in a bucket surrounded by a gauze cage 15" \times 15" \times 15" (see *Butterflies* by E. B. Ford, 1945, p. 204, for detailed description of the Shepherd cage). Mating continued for from 1-1½ hours during which time intermittent thrusting movements of the male indicated that insemination was taking



place. Eggs began to be laid after an interval of twenty-four hours and continued for several days. The first two females each laid about seventy eggs and the third only a dozen, but in her case the male used was the same as had been used for number two. Nine-tenths of the eggs were fertile, hatching in about a week, and within a fortnight I had one hundred and twenty healthy young *machaon* larvae which fed up very rapidly in the incubator. I wish to emphasise once more that the fennel in the greenhouse was quite fresh although no artificial heat had been used.



Difficulties. (1) Breaking away a few minutes after an apparently successful mating sometimes occurred, but re-mating could usually be effected quite satisfactorily.

(2) The time required for hand-mating was sometimes longer than a few minutes and the breeder must be prepared to spend a considerable

time on the operation. On one occasion I experienced complete failure, the female obviously disliking her partner and the attempt was abandoned after one and a half hours.

Conclusions. It is evident that hand mating of *P. machaon* is quite easy and it is hoped that the above account will allow those who wish to breed this beautiful butterfly during the summer to do so without any elaborate preparations. The method may also be of use to those carrying out genetic studies. Further work is being done with other species, but it seems likely that with smaller butterflies the technique may be much more difficult. I am indebted to Dr. E. B. Ford's book *Butterflies* for bringing the principles of the method to my notice.

The Scarcity of *Rhopalocera* in 1951

By S. G. CASTLE RUSSELL.

Although exceptionally bad seasons have been experienced in the past, as will be found recorded in the entomological magazines, I do not remember, nor have I mentioned in my diaries, such a remarkable scarcity of butterflies, even of the commonest species, in the various localities that I visited during the season of 1951. Most of my collecting last year was done within a radius of some 30 miles around this village (Cranleigh, Surrey); but I also made excursions to localities as far away as Canterbury, Lewes and Winchester.

It would appear that there is evidence of some unusual adverse influence, which was world-wide. Colonel V. R. Burkhardt, resident in Hong Kong, tells me that for the first time in his long experience of China the spring broods failed to appear. Usually there is hardly any variance in the date of the first emergence of butterflies in that country, so little in fact that the Chinese calendars contain a fixed date. A similar failure also occurred in Japan, so I am told by a correspondent in that country. Here in England I have also noticed a remarkable scarcity of biting flies in the woods and of house flies. Never before do I recollect collecting in woods at the appropriate time without my attention being called to my hand by a sharp dig caused by clegs, of which sometimes several appeared together. Midges too ceased to trouble. I cannot say, however, that wasps have been conspicuous by their absence. There is always a nest somewhere in my garden and the workers fly in through the kitchen window, bite off small pieces of fish placed in a saucer for the cats, carry them off (although some require time to find the exit) and return for more. The treasure trove is evidently communicated to others, as the numbers increase daily. They are always friendly and we do not interfere with their activities.

The disappearance of the *Argynnidæ* in the district is extraordinary. In the woods new areas are constantly opened up by tree felling, and after a year or two these areas become carpeted with the foodplant (*Viola canina*) and other flowers. In the usual way these new areas would be tenanted by large numbers of *A. euphrosyne* and *A. selene* in consequence of the migration of both species from their preceding habitat. I assume that the ♀♀ leave this because it is becoming so overgrown that sunlight is excluded and the foodplant dies out; therefore they range afield and deposit ova in the new area where there is plenty of food for their larvae. Or it may be that the eggs are laid

in the old habitat on such foodplant as remains and that as soon as the imagines emerge they fly off to the new one. As a rule it is very unusual to find any appreciable number flying in the old habitat. A search for eggs in both habitats would probably provide the answer.

During last season I did not see more than half a dozen *A. paphia* and even less *A. cydippe*. *A. aglaia* has not been met with for some years, except singly either in the woods or on local downs, where I remember it being in abundance at one time. Very few were in evidence in the Shoreham district where it used to be plentiful. *M. aurinia* has also become so scarce that I did not meet with a single specimen on the wing although in most seasons before 1951 many odd specimens were seen day by day. In one particular area some miles away from here there were, however, good numbers to be seen on the wing. I did not personally meet with many specimens of *L. camilla*, but the larvae were in good numbers in the spring and even more so in the autumn. *P. megera* were in fair numbers in some areas whilst absent in others. *M. jurtina* were not plentiful until very late in the season and then only in comparatively small numbers. *M. tithonus* and *C. pamphilus* were not remarkable for numbers as they often are.

On our local downs where *L. coridon* has never failed to be in considerable abundance I found a great falling off and a similar shortage of the other 'Blues'. *P. argus* which used to swarm in a large heather covered area near here appeared only singly in 1950 and 1951, and only small colonies were met with in other areas. *L. phlaeas* was only rarely seen and the railway bank near here where they could always be found in fair numbers was completely deserted in 1950 and 1951. A walk alongside the line for over a mile would produce merely a few *P. megera* and *C. pamphilus*. *C. croceus* I did not see locally but met with about a dozen ♂♂ on downlands, but not a single ♀. *P. aegeria*, usually common in the garden, was also not in its usual numbers.

The prospects for the coming season do not seem to be rosy. Recently I had a letter from a friend who has to fix the date of his holiday in the summer, asking what date I would suggest and which area would be the best for the small fritillaries. I could only give him the Asquithian advice "Wait and see!" The causes of scarcity and abundance is a fascinating subject. Only nature knows the answer, and she also knows how to keep the secret.

The Life-Cycle of *Leucania vitellina* Hüb., *L. l-album* Linn. and *L. pallens* Linn. in Devon

By FRANK H. LEES, F.R.E.S.

Although I hold authority in deep respect occasions do arise when I have the temerity to wonder to what extent statements made by the writers or compilers of our trusted books of reference are based on established fact or merely deduced by analogy or intelligent assumption. It would be too much to expect them to cover every detail at issue adequately but they should at least be helpful and not leave the enquirer in a state of bewilderment. At any rate that was the protest I made, mentally, when I sought to correlate material relating to *Leucania*

vitellina, *l-album* and *pallens*, extracted from my notes and diaries, with the life histories of these species as given in the text-books to which I was referring.

The incidence of a second brood specimen (or one deduced to be such) occurs from time to time in many diverse species that are ordinarily and quite definitely single brooded; it would be interesting to know more of the why and wherefore of such incidents and their implications; but my concern now is with the narrower issue of the true status of the three particular species I have named.

Although *Leucania pallens* is stated by some authorities to be double brooded "on the Continent"—a singularly unhelpful "locality" whether considered in terms of latitude or longitude—its life history here, according to all the books on British Lepidoptera I have access to, is assumed to follow the cycle of a single brooded species. Indeed, of all the British species of *Leucania* only the new-comer *l-album* upsets the alleged uniformity by being obviously and consistently double brooded even among all the eccentricities of a season like 1951.

My earliest date for it (in 1950) is 8th May, but normally the latter part of June and early July is the time for the first brood and September-October for the second. My moth-trap last year (1951) gave me the following:—1st to 12th July, 8 only; 13th July to 9th August, 40; 10th August to 19th September, none; 20th September to 14th October, 38; 14th October to 11th November, 6.

Now the difficulty about *Leucania pallens* is that there is no very obvious gap in a season's records between early and late appearances, and yet they are set so far apart from first to last and often, quantitatively, the peak period content so closely approximates, that one cannot but question the conventional life history given by our authorities. Here are the figures taken from my diary grouped in practically the same periods as those given for *l-album*:—28th June to 12th July, 18; 13th July to 7th August, 39; 8th August to 17th August (which included six "good" nights), none; 18th August to 19th September, 14; 20th September to 3rd October, 5.

To bring other more normal and prolific years into our comparisons I will set out the figures for 1949 and 1950 separately. There are slight variations in the dating of the groups (due to an effort on my part to minimise fluctuations obviously arising from weather conditions only) but the over-all picture tells the same story.

In 1949, from 15th June to 12th July, 59 *pallens* were taken; from 13th July to 24th July, 63; 25th July to 17th August, 9; 18th August to 31st August, 239; 1st September to 20th September, 138; 21st September to 18th October, 22.

In 1950, 19th May to 14th June gave me 48 *pallens*; 15th June to 12th July, 127; 13th July to 21st July, 50; 22nd July to 23rd August, 56; 24th August to 31st August, 1 only; 1st September to 20th September, 39; 21st September to 18th October, 5.

It would appear from these figures that *Leucania pallens* is, in educational parlance, a problem child upon whose case our authorities have turned a blind eye. May I direct attention to it? Apparently there are two broods; but could it not be that our late summer and autumnal *pallens* are the progeny of the late brood of the previous season and have fulfilled a twelvemonth cycle after all? Yet the larvae

of *pallens* and *l-album* are much alike, though I have to confess that I have never bred the former. Why should *pallens* require twelve months to accomplish what *l-album* can do in three? Again, I can only shake my head. Perchance someone will pity my ignorance and resolve the problem.

There is another *Leucania* that appears in Devon from late August to early October and that is *vitellina*. Here again our text-books seem to me to be assuming a great deal and to be dogmatic on the slenderest evidence regarding its life-history. The South-eastern Union of Scientific Societies in their List of Immigrant Insects still include *Leucania vitellina* among their Class "C" vagrants. Newman & Leeds, in their invaluable and usually accurate text-book and subject to the proviso "Probably fresh immigrations every few years keep this going in England", give a circumstantial single brood life history for the species over here. Scorer, though saying nothing to explain the gap, gives February-April for the pupal period and August-September for the imago! Barrett on the other hand tells us that "on the Continent" *vitellina* is on the wing from June to August but over here in August and the beginning of September. I remember reading in *The Entomologist* an account of collecting in Spain recording the capture of *vitellina* in April and May, and in the late summer it appears to figure more frequently in records of captures in southern and south-western France than it does even in south Devon: it would appear that "on the Continent" *vitellina* behaves very much as (by my records) *pallens* does in Devon.

It may be argued that just as certain species are double brooded in southern England and single brooded in the north, so *vitellina* may be single brooded on our southern shores and double brooded in southern France and Spain. But what real evidence is there that eggs laid in the September of one year produce the *vitellina* taken in the following September? I am aware that Devonshire lepidopterists like to believe that *vitellina* breeds here and that as a rule a Devonshire *vitellina* carries rather more red pigment (and frequently more dark grey in addition) than one finds on those taken elsewhere. Such heavier pigmentation may be due to local influences and certainly points to a somewhat prolonged pupal period, but it does not imply a larval period of seven months or a pupal one of three months. The darkest specimen in my collection was bred from egg to moth in 88 days against 60 days for more intensively 'forced' decidedly pale insects. Mr Edelsten in 1920-21, practically without any recourse to forcing, wintered a brood of *vitellina* in a room only occasionally heated—"the larvae did not attempt to hibernate" and the moths emerged between 18th May and 8th June. In the Table (4E) of British Immigrant Lepidoptera that gives the yearly records reported to and compiled by the S.E.U.S.S., *vitellina* appears to be taken pretty consistently, and in the Devonshire Association's new list of the Lepidoptera of the county it is stated to be "frequent as an immigrant to the south coast especially that between Teignmouth and Start Point". An admirable summary, but it does not help us to answer the question "does *vitellina* breed in Devon?" When I came to look up the details of the S.E.U.S.S. records, however, I found that they included a very few cases of June captures.

Discussing this point with Devon's veteran entomologist Mr. P. P. Milman he confirmed this important fact: he had taken *vitellina* him-

self in June, but such specimens had been poor ones and had never found their way into his collection. When I said that there did not appear to be any record of wild larvae ever being found, Mr. Milman told me that on one occasion only did he or his father find a wild larva of *L. vitellina*. It was in a mixed bag that included *albipuncta* and *l-album* taken in July 1907. It was about halfgrown then, and rearing it with the greatest care they got the moth out in due course. In the following year (1908) *vitellina* was more abundant than he has ever known it before or since. He believes that they took 120 imagines that August and September. Would *vitellina* establish itself in Devon? It looked like it; and then in 1909 only one specimen turned up on their sugar!

I am afraid that Newman & Leeds's resident single brooded *vitellina* were mere wishful thinking and I suggest that the probabilities all point to our locally bred *vitellina* being the year's second brood from migrant parents arriving here in early June, themselves the first brood of the year which as larvae had wintered on sunnier shores than ours. *Vitellina* larvae are extremely responsive to temperature rises above 60° F. in captivity and scarcely show any tendency to hibernate. Could one winter them successfully in the open here? I intend to make the experiment if I get the chance and also to find out a lot more about *pallens*, which should not be so difficult a matter.

Maidencombe, Torquay, 1952.

A Search for Larvae of *Eupithecia actaeata* Wald. and *E. immundata* Zell. A Postscript

By E. A. COCKAYNE, D.M., F.R.C.P.

In the January number of this volume, at page 11, an account was given of a search in Yorkshire for the larvae of *Eupithecia actaeata* Walderdorff and *Eupithecia immundata* Zeller, which Dr. SKAT HOFFMEYER had suggested might possibly be inhabitants of this island. The search was undertaken by Messrs. E. W. CLASSEY and H. S. ROBINSON and was confined to localities in the West Riding.

The foodplant of these two species, baneberry or herb Christopher (*Actaea spicata* Linnaeus) is confined, in this country, to the north of England—chiefly Yorkshire; but it has also been found in Westmorland and West Lancashire. It is a plant from one to two feet high. and grows almost invariably on rough limestone tracts. The plant flowers in May and June, and both flowers, leaves and berries much resemble those of elder, the flowers being small and white, with 4 petals, and the berries nearly black. The flowers grow in loose terminal racemes.

Mr. FRANK HEWSON (who is Recording Secretary of the Bradford Naturalists' Society) suggests that the conclusion arrived at by Messrs. CLASSEY and ROBINSON, namely that "if the insects ever occurred in this country, they do so no longer," is somewhat too positive, since their search was restricted to little more than 20 per cent. of the localities in which *Actaea spicata* grows. These localities (Colt Park, Southerscales and Raisghyll), to which Mr. C. A. CHEETHAM kindly conducted them, were the best West Riding localities, and although the

conclusion to which the searchers came may well be correct so far as these particular places are concerned, the possibility that the two insects may occur in other localities cannot yet be ruled out altogether.

Mr. HEWSON very kindly sends us the following list of localities (which he has received from Mr. A. MALINS SMITH, M.A.) in which *Actaea spicata* grows. It is to be hoped that our North Country entomologists will take up the search for these two interesting moths again this year; for until a thorough search of all the known localities has been made the possibility that *Eupithecia actaeata* and *E. immundata* occur in this country as well as in Denmark remains. A brief account of the larva and its habits was given in the above-mentioned article (page 11).

DISTRIBUTION OF *ACTAEA SPICATA* L. IN ENGLAND.

YORKSHIRE:

WHARFEDALE. Right bank of Wharfe:—Raisgill, Bouthier Gill, Kirk Gill, Firth Gill, west of Kettlewell, below Nether-side Hall.

Left bank:—Deepdale, Crayfalls, Buckden, Grass Wood (Grassington).

Littondale. Between Arncliffe and Kilnsey. Hesleden Gill, on right bank Litton to Arncliffe, including Scoska Wood, on Cowside beck between Darnbrook and Arncliffe.

Lower Wharfedale on Permian limestone. Boston Spa woods, Thorp Arch woods, Hazelwood, Aberford, beechwood at Barwick-in-Elmet, Langshaw Wood, Lowton.

AIREDALE: Limestone pavement between Malham Cove and the Tarn.

Among shrubs by Malham Cove.

By brook below Malham Cove.

Kirby Malham.

On Permian Limestone:—Woods bordering Kippax Park.

CALDERDALE: Near Mirfield. This differs from all other localities in not being on limestone, but coal measures. Possibly planted.

RIBBLESDALE: Scar near Ribbleshead.

Colt Park Wood.

Moor west of Sulber Nick.

Ling Gill.

LUNESDALE: Chapel-le-dale pastures, limestone pavement between Chapel-le-dale and Moor Gill, wood near Clapham. Souther Scales Fell, Ingleborough.

NORTH RIDING: "In the Yore district in Whitfield Gill, on both sides of the stream near the waterfall, and about a lime-kiln near the river at High Mains, near Masham. About the Magnesian Limestone at Thornton Watlass and Thorp Arch. In the woods of the slopes of the eastern calcareous range in numerous stations: Yow-

lasdale, Cold Kirkby, Rievaulx, Beckdale, Yedman-dale, Forge Valley, and in the Howardian tract at Nunnington, Hovingham, Hildenley, and in Cawklees Wood." (*North Yorkshire*, by J. G. Baker, 1906, page 252.)

EAST RIDING: Near Kirkham Abbey.

WEST LANCASHIRE: Leck Fell.

WESTMORLAND: "Between Kendal and Arnside, Lees."

Near Arnside, 1905 (W. C. Worsdell: *The Flora of Westmorland*).

The Breeding of *Coscinia cribraria* Linn.

By H. B. D. KETTLEWELL, M.B., B.Chir.

In June 1928 with the help of the late Percy Bright my mother, after many fruitless searches, found the locality near Canford Cliffs Golf Course, Bournemouth. Unfortunately the only specimen she secured of the several she saw was a male, but subsequently we took both males and females. The circumscribed area on which this species occurred was a stretch of heather growing on tumulus-like mounds bounded on one side by a pine wood and on the other by marsh. This spot is of interest also in that I took here at rest on a pine trunk a typical female *Cleora cinctaria* Schiff., which I gave to Sir Beckwith Whitehouse, who bred from it his melanic ab. *nigraria* Rebel.

My mother found that she could walk up *cribraria* in the afternoon, but R. P. Demuth discovered that their normal time of flight was at dusk, and for about an hour from 10 p.m. (G.m.t.) both sexes could be taken on the wing, and later as they sat high up on the heather. I obtained eggs from a female, which were laid in a batch, and from the extensive menu suggested in the text-books I chose a mixture of heather and lettuce, both of which they ate readily. Half this brood, which was a small one of about thirty, was sent to P. P. Milman of Paignton, Devon. Some of mine died in the first two instars, but about ten succeeded in hibernating when under half an inch in length. Five of these fed up the following year extremely slowly and passed a second winter in hibernation, hatching in the summer of 1930. It is interesting to record that P. P. Milman's larvae behaved in the same way, some hatching in 1929 and some in 1930. I am unable to augment the foregoing account in greater detail as my records for these years are not with me at present. The number of ecdyses undergone by the two-year larvae was very high, probably eight.

In June 1931 I obtained a large batch of eggs of *cribraria* from a female from the same locality. The young larvae were kept in glass-topped tins as were the previous brood; but acting on what I had learnt from these, from October onwards they were treated entirely differently. I constructed a case 3 feet long, 2 feet wide, and 1½ feet deep. Three of its sides had glass windows and the fourth side had fine perforated zinc inserted for ventilation. This was planted out with young healthy sods of scrub heather, the result of rabbit cropping. The top was covered with a sheet of glass, the whole outfit being placed on a flat roof, facing south, where I lived in London. The larvae, about 120, were

placed in this, and in the autumn the heather was watered from time to time, but in the winter, except for the glass top being removed occasionally on wet days, it was allowed to remain fairly dry.

In early March the larvae recommenced feeding on sunny days and at this stage I introduced an 80 watt electric light bulb, which was suspended over the heather and turned on each night from 6 to 10 p.m. The result was dramatic and each evening, particularly after dull days, the larvae ascended in a dense mass around the bulb, stripping the heather, their shining black tuberosities sparkling in the light, a sight which many entomologists including myself had never seen before. By moving the position of the electric light bulb daily the heather was farmed, and by judicious watering the balance between heather and *cribraria* was held till the end. More than 100 *cribraria* pupated in May and I shall never forget my return from a hot week-end in June 1932 when over 80 moths had emerged and in spite of all my efforts London that day received her first influx of *C. cribraria*. It appears therefore that this species can be bred without much difficulty in confinement. This is of considerable interest in that its variability ranges from black to white, but for the most part these differences are geographical races, which Lempke has worked out so thoroughly in *Lambillionea* (1937).

The English race ssp. *bivittata* South, confined to Dorset and Hampshire, is for the most part darkish, but individuals have from time to time appeared which are nearly all white, and all gradations appear in series, so that the position of these English *cribraria* ssp. *bivittata* is probably one where there is considerable variability under multifactorial genetic control, the extremes very light and very dark being in the minority.

It is unfortunate that all the specimens, about half a dozen, of the Dutch race ssp. *arenaria* Lempke, which have been taken at light in Kent at Sandwich and Deal, have been males. These are stated to breed on the sandhills of Holland and have the forewings almost completely white, comparable to those individuals labelled New Forest, which occur as rarities in our own native population of *cribraria*.

It appears to me that this species would provide excellent material to work on by selecting in two directions, dark and light, from our indigenous stock.

Some Notes on *Oria musculosa* Hübner in Wiltshire

CAPTAIN R. A. JACKSON, C.B.E., F.R.E.S.

This attractive 'wainscot' is still to be found in its old headquarters, north of Salisbury, but not I think in the numbers in which it occurred during the war. On the other hand, it may be extending its range, for this year I found it as far north as Alton Barnes, and another was taken in a moth trap at Box in the extreme west of the county. It is not by any means universally distributed and since we moved here in 1948 I have not been able to find it in great numbers until last year, when winter wheat at Tilshead was really heavily infested.

We were driving home from Alton Barnes on 14th August, when I saw a binder at work, about one-third of a big field having been cut, so

I stopped the car and had a look. The *musculosa* were flying out in numbers, so I determined to return at dusk to make a further inspection, getting my friend, Mr. B. W. Weddell from Trowbridge, to come with me.

We got to the field about 21.30 (B.S.T.) and at once put down our lamps, mine near the standing corn, Weddell's amongst the stooks. We then started to walk along the edge of the standing corn, and found a few males flying along and over it, but numbers of moths of both sexes were sitting on the ears. Returning to my lamp about 21.50 I found that about eight males had come to the sheet, although it was a cold clear night with a bright moon and a heavy dew (Full moon, 17th August). No moths came to Weddell's sheet, which was much further from the standing corn, and no more had come to my light by 23.00, when we decided to go home.

All this time, fresh moths were coming up to the ears, both sexes being represented, with several pairs *in cop*. There must have been many hundreds in that one field.

Looking round the grassy edges of the field we could find no insects, but a few were at rest on the stooks, some of which had been set up, whilst others were still lying on the ground. We could see no signs of any females engaged in egg laying.

On the 16th I determined to visit the area again, when once more it was extremely cold and clear, the temperature falling to 39° F. I arrived at 20.30 (B.S.T.) in order to watch the first flight, moving to the next field along the road, where cutting had just been started, as the first field was, by now, all in stook. I could only find one moth, a worn female, on the ears by daylight, but at about 21.00, males began to fly wildly up and down, and over the corn.

As it got darker, I saw the moths begin to flutter up the wheat stems at about 21.15, coming up from very low down on the stalks, whilst after dark new arrivals were to be found each time one walked round. No moths at all came to my lamp.

After this I decided to re-examine the first field, but not a moth was to be seen, either on the stooks or on the ground, nor were there any on the coarse grasses at the edges of the field.

O. musculosa is a really beautiful and variable insect, but it must be very newly emerged to be seen at its best. This is difficult for the visitor to ensure, however, as it is remarkably variable in the time of its appearance.

I suppose the very end of July or the first week of August is the usual time, but in 1949 it was on the wing in mid-July, whereas in 1951 it was emerging on 14th August. Experience in the Salisbury area shows how susceptible this insect is to good husbandry. There are two farmers there, who run large flocks of sheep, and who believe firmly in the old rotation system, only growing wheat every third year in a particular field.

In 1950 I saw a few *musculosa* at light close to these fields, but they must have come from across the road, for when the wheat was cut two days later not a single insect came out.

Another factor that must re-act heavily against the insect too, I think, is the increasing use of combine harvesters and the practice of burning the straw and stubble in dry weather. Although, in years past,

I have seen the insect along this valley, I have seen none in the last three years, and it is noteworthy that most of the harvesting is done with combines.

The problem still remains as to where the female lays her eggs in the wild. We know that she lays them in neat rows inside the sheathing of the straw or stubble, but where does she do this in the open?

I incline to the opinion that she lays low down in the standing corn; but this will not be easy to determine, as trampling down the corn for the purpose of observation would hardly be likely to commend itself to the farmer, who is so tolerant of those of us who ask leave to follow his machines.

Finally I should like to say that if any of our readers come from a distance to find the insect, I should be very glad to give them any assistance in my power.

Middle Farm House, Codford St. Mary, Warminster, March 1952.

Autumn Collecting Notes from the Kendal District 1951

By NEVILLE L. BIRKETT, M.B., B.Ch.

In this northern district the entomologist is even more dependent on the vagaries of the weather than is his southern confrère so far as concerns his autumn activities. In 1951 the period under review—from mid-August to the end of the year—was one of much rain, and opportunities for active field-work were relatively few.

On the nights of 18th, 19th and 20th August I visited some moorland between Kendal and Sedbergh and collected at an altitude of some 800 feet. On each occasion I sugared some 30 or 40 posts of a fence running across the moor. I examined heather and grass, while later in the evenings I had the car headlights directed across the moors. Results proved quite interesting though the number of species noted was not great. The commonest species were *Calostygia didymata* L. and *Hydriomena furcata* Thunb.—the latter of a very nice form having large pale discal spots. At the car lights second brood *Diarsia festiva* Schiff. were abundant. This species does not commonly produce a second brood here. At sugar *Lithomoia solidaginis* Hübn. was common and the form occurring was large and brightly marked. On the three nights I took a total of two *Celaena haworthii* Curt. It was a great surprise to take a single worn *Mormo maura* L. at sugar. This species is distinctly rare in this district away from the valley of the River Kent. I presume the few stunted hawthorn bushes by the roadside had provided larval sustenance.

My next evening outing was on 30th August when I visited an area of fen in north Lancashire. The great entomological possibilities of this fenny area have only recently been realised. In company with a young Kendal collector, John Thorpe, I sugared and worked light. The total lack of sizable trees and posts necessitated some make-shift and the sugaring mixture was applied to the broad leaves of the Yellow Flag, so common in the area. The commonest moth at sugar was *Celaena leucostigma* Hübn. The moth occurred as type form, as f. *albipuncta* Tutt, and the f. *fibrosa* Hübn. The last were very finely marked. Amongst

many commoner species were numerous second-brood *Orthonama lignata* Hüb. in perfect condition.

This same night, 30th August, my trap in Kendal caught a fine female *Drepana binaria* Hufn. This is a rare species in this district so constitutes a welcome record.

Another trip to the high moorland on 2nd September was meteorologically disappointing—clear, dew and cold at first was followed later in the evening by cold rain. On the usual forty or so sugared posts the only insects noted was a pair of *Tipula* sp. in cop.! However, plenty of moths were sitting about on the heather. These were of two species only—*Lygris testata* L. and *Oporinia filigrammaria* H.-S. Many of the latter were just emerging and had quite flaccid wings.

On 8th September the trap at Kendal produced a beautiful fresh *Cirrhia gilvago* Schiff. which is another good record for this part of the country.

On the evening of 9th September my wife and I visited the Meathop Moss Nature Reserve. It was the usual cool evening with dew which this autumn produced in such quantity, and we were not surprised to find few insects on the move. On our way back to the main road I found myself walking through a large patch of *Polygonum* sp. and decided to look for cones of *Caloptilia phasianipennella* Hüb. These were quite plentiful and were readily found by placing the lamp on the ground so that it illuminated the leaves from underneath. Many of the leaves had two tenanted cones. A good series of moths was bred later in the month. Soon after collecting my cones I spotted a *Citria lutea* Strom. feeding on a grass-head. This chance observation led to the capture of a nice fresh series of this moth in the next half-hour. We also found a single fresh *Anchoscelis helvola* L. and a number of worn *Cirrhia icteritia* Hufn.

On 20th September I again visited the fenland haunt in the customary clear and cool conditions. Very few insects were in evidence and I only noted a few *Agrochola circumcellaris* Hufn. and *Citria lutea* Strom. on the heads of the Common Reed. A single *Agrochola lota* Cl. was welcome—it is a species not usually common in this district though it turned up in October in Kendal quite commonly.

The last few days of September and early October I spent near Dorking in Surrey. The weather was hot and sunny but the nights proved cold with occasional mist. Nothing of great note was observed in the butterfly line—a floral border was well patronized by *Gonepteryx rhamni* L., *Polygonia c-album* L., *Aglais urticae* L., *Vanessa atalanta* L. and a host of *Syrphids* and Bees. A few *Plusia gamma* L. were also in evidence. At night—up to midnight only—I worked a sheet with a 125 watt m.v. lamp as illuminant. This provided a few moths but conditions were not good for night work. With customary irony the next few nights after my return north were ideal! The commonest species was *Agrochola lychnidis* Schiff. which was in nice variety. I was pleased to take *Antitype flavicincta* Schiff., a few *Tiliacea aurago* Schiff. and *Deuteronomos fuscantaria* Haw.—all being species I wanted.

Back in the north I did not get another evening collecting until 20th October, when I searched some of the extensive ivy bloom in the Arnside-Silverdale area. Though the evening was not cold few moths were in evidence and the high clouds were seen to be moving in an easterly air-

stream. *A. circellaris* Hufn., *A. macilenta* Hübn., *Phlogophora meticalosa* L., and *Xylena vetusta* Hübn. were the only species noted.

On 25th October I was walking near the top of Wrynose Pass, at about 1,300 feet altitude, when a whitish moth was disturbed and flew off. I gave chase and having no net with me had to wait my chance. After a run of fifty yards I managed to box a perfect specimen of *Arenostola pygmina* Haw. This was a great surprise because we usually take this moth at much lower altitudes in early September. Also the hills were just clear of snow having been covered for most of the previous week.

During November and December I worked the trap in my garden sporadically but nothing of note was taken and no further collecting trips were undertaken.

It might be pertinent to add a brief note regarding the lack of abundance of *Triphaena pronuba* L. in this district. In 1951 the species was very scarce here compared with its usual super-abundance. Not only was the scarcity noticed in the captures in my trap but also during excursions to the surrounding areas. When on holiday at Tenby at the end of July the species there was scarce, but I have no data for previous years for that locality to be able to give any opinion of value.

Kendal, 1/1/1952.

Notes on Dorset and Hampshire Lepidoptera in 1951

By F. M. B. CARR.

From 9th February to 12th April I congratulated myself that I could hardly have chosen a better time for a sojourn in the ward of a well-known London hospital. The rain fell almost continuously. It was not until the middle of May that the weather and I had sufficiently recovered for me to begin to look around for a promising field of operations within easy reach of my home. It occurred to me that I had never explored some patches of woodland within twenty minutes' walk of Sandbanks which might possibly be productive of *Ectropis consonaria*; for on a near-by light in the previous season I had found a few worn individuals. On looking up the Dorset list I read that the status of this insect in the county required confirmation, the compiler going on to say that he had "so far never seen the species in Dorset in any stage".

Here was an easily accessible spot for a convalescent to explore. Between 17th May and 14th June I thoroughly enjoyed myself, for *E. consonaria* was there in some strength, and some very beautiful forms were taken. I found the insect an interesting study. On some days the moths were very lethargic and it needed much coaxing to get them to move. At other times they were just the reverse, being very skittish and flying off the trees before they could be seen at rest. So far as my observations went a dull cold day, especially if there was a sprinkle of rain, induced sluggishness, whilst a warm sunny day made them restless and also more inclined to settle high up on the trunks.

During five seasons at Sandbanks I have taken *Tethea ocularis* very sparingly, never more than two in a season till this year (1951), when I got six, one at treacle and five at light; three of the latter on 1st July, all between 11.20 and 11.30 p.m. s.t.

Stauropus fagi is a moth that has hitherto evaded me most successfully. This year I took one at light on 21st June, a second on a post in the New Forest three days later, and a third in the middle of Bournemouth on 27th July. Very few *Euphyia cucullata* also have come my way: I beat a beautiful one at Tarrant Gunville on 7th July. Two full-grown larvae of *Notodonta anceps* (*trepida*) fell into my beating-tray in the New Forest on 14th July. Both pupated shortly afterwards.

Dr. H. King, Mr. H. Symes and I found *Coscinia cribraria* (*cribrum*) in fair numbers in one of its Dorset strongholds on 17th July. On the same day *Colias croceus* was seen at Bradbury Rings. During my five seasons in Dorset this has been the worst for this butterfly, not more than half a dozen examples being seen. *Strymon w-album* was fairly plentiful at the same locality and time. Fortunately for me there was very little blossom on the bramble just then and all those seen were on privet—so much safer for one's net.

Several *Apatele leporina* were taken in Bournemouth during July, evidently attracted by the big lamps during the previous evening.

During August and September I devoted some time to beating and searching for larvae. In the damp mixed woods they were scarce, but on the chalky hillsides they were much more plentiful. Among the better species beaten in the New Forest were *Pseudoips bicolorana*, *Sarothripus revayana* (also imagines), *Chloroclysta siterata*, *Selenia lunaria* (I had never beaten this curious larva before nor often come across the species in any stage), *Plagodis dolabraria* (common), *Boarmia roboraria*, *B. punctinalis* and *Cleora jubata*. One red-letter day in Dorset *Apatele alni*, in the bird's dirt stage, fell from an oak into my beating-tray. About three minutes later Mr. H. Symes found a full-grown larva of the same species beautifully displayed on a hazel leaf. After being fed on the foodplants on which they were found both larvae went into elder stems, and we hope for the best.

Though holly is well known as a foodplant of *Sphinx ligustri* it may be worth mentioning that I found eight nearly full-grown larvae of this species on a holly at Sandbanks. All were busily eating. Judging by the large number of bare stems others had been there and had probably gone to earth. Whilst on the subject of unusual foodplants I should like to put on record the finding of six healthy and three parasitized larvae of *Aporophyla nigra* in 1950 on *Calluna* at Studland. The healthy larvae were fed by me on the same foodplant throughout and they duly produced moths.

Amongst other larvae obtained in various Dorset localities this last autumn were *Pheosia tremula*, *Notodonta ziczac*, *N. dromedarius*, *Thyatira batis*, *Gastropacha quercifolia*, *Eilema sororcula*, *Apatele leporina*, *A. tridens* (in two localities), *Calocasia coryli*, *Craniophora ligustri* (in four localities and commonly in two of them), *Cucullia absinthii* (Portland, commonly), *Euchoeca nebulata*, *Horisme tersata*, *Anagoga pulveraria* (fairly common locally), and *Plagodis dolabraria*.

Sugaring in the garden at Sandbanks was generally poor, many interesting species previously taken being absent; but perseverance was more or less rewarded in mid-October by the capture of three *Lithophane semibrunnea* and one *L. socia*. *Graptolitha ornithopus* and *Hypena rostralis* were, I think, the only two species commoner than usual.

I worked my light (not a mercury vapour one) on most suitable nights and on many apparently unsuitable ones. Good nights were few and far between, but perhaps the following records may not be without interest:—

Hyloicus pinastri (2), *Stauropus fagi* (1), *Thyatira batis* (7), *Tethea ocularis* (5), *Nola albula* (1), *Celama confusalis* (3), *Arctia villica* (2), *Coscinia cribraria* (1), *Eilema griseola* (2), ab. *flava* (2), *E. lurideola* (7), *E. complana* (11), *Miltochrista miniata* (5), *Cryphia muralis* (3), *Hadena suasa* (1), *H. contigua* (1), *Nonagria geminipuncta* (1), *Chilodes maritima* (2), *Arenostola phragmitidis* (3), *Leucania straminea* (much scarcer than usual), *L. obsoleta* (1), *Caradrina ambigua* (3), *Orthosia gothica* (mentioned for late date, 12th June), *Catocala nupta* (mentioned for late date, 6th November), *Laspeyria flexula* (5), *Tholomiges turfosalis* (2), *Hipparchus papilionaria*, *Scopula emutaria* (2), *S. imitaria* (common), *Cosymbia orbicularia* (1), *Acasis viretata* (5), *Thera firmata* (6), *Perizoma bifaciata* (2), *Eupithecia arceuthata* (common), *Nycterosea obstipata* (2), *Anania nubilalis* (a female), *Nomophila noctuella* (often a pest, only 5 this year).

Of the above the greatest surprise was *Nola albula*; I do not know of any records in this corner of the county. The Dorset list mentions only one, at Weymouth. My visitor appeared on the 9th August. Is there an undiscovered or a 'hush-hush' locality somewhere within reasonable distance of Sandbanks? Other species new to my light were *S. fagi*, *C. cribraria* (possibly from Studland or Parkstone golf links), *H. contigua*, *L. obsoleta* (not in the Dorset list), *T. turfosalis*, *S. emutaria*, *P. bifaciata* and *Anania nubilalis*. With regard to the last-named I also obtained a female from Parkstone last year.

I have found Sandbanks an interesting place for 'Wainscots' and have had an eye on a neighbouring marsh, not a very pleasant place to negotiate at night. Dr. H. King joined me on two nights this year (1951), but both turned out cold and windy. However, on the first evening he took two or three *A. phragmitidis* and I captured *Nonagria dissoluta*, the second taken here by me. This also is a species that does not figure in the Dorset list.

Collecting in Norfolk

By S. WAKELY.

Several paragraphs have already appeared in the *Record* by Canon Edwards and myself of insects taken by us in Norfolk during the last fortnight in June 1951. There were, however, a number of other species taken by us during our stay, and these further notes will, it is hoped, be of interest.

Our headquarters was at West Somerton, and a row of willow trees on the Horsey road was sugared and visited on most nights. Common insects, however, were all that appeared, but some of these were quite good forms and in such grand condition that we never returned with empty boxes. On one night it would be crowds of *Hadena suasa* Schiff., while the next night this species would be scarce and *Procus fasciuncula* Haw. and *P. strigilis* Clerck would be on every tree.

Nymphula stratiotata L. we found in plenty in the roadside ditches after dark, but some skill was required to net them off low water plants

on which they rested. A slip into one of these watery places would have been no joke. One specimen of *Schoenobius forficellus* Thunb. was taken here.

Various Broads were visited by car. At Wroxham, larvae of *Peronea shepherdana* Steph. were found on *Spiraea ulmaria* and a few moths bred later. Larvae of *Aristotelia arundinetella* Staint. feeding in mined leaves of *Carex paludosa* were also found in the vicinity, but attempts to rear them failed. In an alder swamp larvae of *Acrolepia pygmaeana* Haw. were common in leaves of *Solanum dulcamara* and emerged a few weeks later. One specimen of *Aethalura punctulata* Schiff. (Grey Birch) was taken amongst these alders, with no birch to be seen in the vicinity. Is it possible that the larvae occasionally feed on alder?*

Many visits were paid to the sand dunes, principally at Winterton. Sugaring here, tried one night only, was a complete failure, although bunched grass tufts and cement tank obstacles were utilised. *Anerastia lotella* Hübn. was the most common moth met with, both by day and at dusk. Two micros locally common were *Mniophaga desertella* Dougl. and *Opostega salaciella* Treits. Plenty of excitement and exercise were to be had on sunny days by trying to catch the active tiger beetle *Cicindella maritima* Dj., of which about a dozen were taken. Natterjack toads were seen on most visits to the dunes, crawling about in their ungainly fashion, and a very large owl we flushed from the ground was almost certainly the local Short-eared species.

On the main road between Horsey and Waxham the many poplars by the roadside showed signs of heavy attacks by the larvae of *Sesia apiformis* Clerck, but all the workings were old with empty cocoons in plenty. It is possible they were all killed by the disastrous flooding of this area when the sea broke through the dunes at Horsey in 1938. One larva of *Paltodora cytisella* Curt. was found in a stem of bracken near the sea and larvae feeding 'tents' on *Artemisia vulgaris* of the local plume *Oidaematophorus lienigianus* Zell. were frequently seen, both at Horsey and Winterton. However, they were all empty, so we concluded it was too late for the larvae and too early for the perfect insect.

When examining the foliage of *Peucedanum palustre* for eggs of *Papilio machaon* Linn., a number of leaf spinnings containing *Depressaria* larvae were found. A very striking red form of *D. ciliella* Staint. was bred from these, together with one nice *D. yeatiana* F. Occasionally a more bulky bunch of spun leaves was found containing several gregarious larvae, and these proved to be *D. angelicella* Hübn. This is probably a previously unrecorded foodplant for this species. Two specimens of the rare beetle *Cerapheles terminatus* Me. were seen on the same plant, but only one of these was captured. Larvae of the weevil *Phytomus adspersus* F. were also taken on this milk parsley, and bred with no trouble.

Until this holiday the writer had not seen the Swallow-tail butterfly in its native haunts in Britain, and it was a great thrill one day to discover a flourishing colony on the Broads. During a burst of sunshine four were seen at once on a patch of ragged robin flowers a few yards in extent. Very few of those netted were in perfect condition, but we found it easy to take them from the net and examine them by holding the wings together carefully. Those with split wings (usually the only

*Yes, alder is a recorded foodplant.—ED.

blemish) were then detected and released, whereupon they usually crawled about on one's hand and displayed their glorious colours for a few moments before taking flight.

In addition to the species already mentioned the following insects were taken:—

ODONATA: A pair of *Libellula fulva* Mueller near Wayford Bridge.

HEMIPTERA: *Aelia acuminata* L. Locally common, by sweeping grass at Winterton.

NEUROPTERA: *Chrysopa abbreviata* Curt. Winterton.

TRICHOPTERA: *Phryganea grandis* L. and *Limnephilus lunatus* Curt. Winterton.

LEPIDOPTERA: *Spilosoma urticae* Esp. One at light, Martham Broad; *Mniophaga mundella* Dgl.; *M. umbrosella* Zell.; *M. politella* Staint.—one only; and *Gelechia diffinis* Haw. Winterton.

COLEOPTERA: *Elaphrus cupreus* Df., Martham; *Stomis pumicatus* Panz., Horsey; *Calathus erratus* Sahlb., *Necrophorus vestigator* Hl., and *Saprinus semistriatus* Sc., Winterton; *Cantharis cryptica* Ashe, Martham; *Silis ruficollis* F., Wroxham; *Phylan gibbus* F., Horsey; *Crypticus quisquilius* L., Horsey; *Philopodon plagiatus* Sl., Horsey and Winterton.

HYMENOPTERA: *Dolerus germanicus* F., Wayford Bridge; *Athalia lineolata* Lep., Winterton; *Empria klugi* Steph., Horsey; *Selandria serva* F., Martham Broad; *Ichneumon xanthorius* Forst., Hemsby; *Tachysphex pompiliiformis* Panz., *Ammophila sabulosa* L., Martham Broad; *Podalia viatica* L., and *P. affinis* Kirby., Winterton; *Andrena nigroaenea* Kirby., Scrathby; and *Coelioxys elongata* Lep., Winterton.

DIPTERA: *Thereva annulata* F., Winterton; *Dolichopus griseipennis* Stann., W. Somerton; *Argyra diaphana* F., Horsey; *A. argentella* Zett., Horsey and W. Somerton; *Myathropa florea* L., W. Somerton; *Tubifera intricaria* L., Wayford Bridge; *Tropidia scita* Harris, W. Somerton and Wayford Bridge; *Cheilosia granditarsa* Forst., Martham Broad; *Tetanops myopina* Fall., *Urophora stylata* F., *Tephritis vespertina* Loew, *Oedoparea buccata* Fall., and *Opomyza germanationis* L., Winterton; *Sphaerocera curvipes* Latr., West Somerton; *Meromyza pratorum* Meig., Winterton; *Caricea tigrina* F., Wroxham.

Both on the outgoing and homeward journey by car we stopped on the Breck for lunch, and searched for some of the good species for which this district is famous. Of Lepidoptera, the only species of note was one *Loxostege sticticalis* L., near Brandon. Single specimens of the beetles *Homalophia ruricola* F. and *Cardiophorus equiseti* Hb. and the Hemipteron *Syromastus rhombeus* L. were also taken, all local and uncommon species.

In conclusion I should like to thank Dr. K. G. Blair, Capt. L. Parmenter, Mr. J. W. Saunt, and last but not least various experts at the British Museum, for their valuable help in determining many of the species recorded.

In Hampshire Woods

By PAUL H. HOLLOWAY, F.R.E.S.

A thin line of new moon hung over the rim of the south-western horizon as my friend and I left home for the last moth hunt of the old

year, under a sky washed clear by the torrential rain and wind that had ploughed through the previous night and morning. It was 31st December 1951, and as we reached the woods and trudged through the soaked rides our torches showed *Operophtera brumata* hanging motionless like small dead leaves from innumerable twigs. Although they were so plentiful we found only one pair *in cop.* and no other species occurred. Home again, I recalled some of the interesting experiences of the past season.

There was my attempt to breed *Endromis versicolora*. This will almost certainly result in ultimate success as I have two dozen cocoons in cold storage. How many will emerge this year is impossible to estimate as a high percentage usually remains two or even three years in the dormant state, according to the reports of my colleagues. But should *versicolora* disappoint me I shall have had the joy of observing the progress of the larva: the brightening of colour through each instar, the increased appetite as larger and larger quantities of birch had to be gathered daily, the delightful blend of mauve and green immediately prior to pupation. The only difficulty I had was in transferring them to fresh food, for they 'bleed' at a mere touch, which means handling only the twigs they rest on and never the larvae themselves. *Saturnia pavonia* is equally tantalising in the pupal stage, only two emergences taking place last year from thirty of the previous season's cocoons, a male and a female, and both crippled! Perhaps some of those still in my pupa-cage will behave in a more seemly manner.

Beating *Euonymus* in my garden in early spring provides literally hundreds of *Abraxas grossulariata* and they nearly all result in more heavily marked moths than those of the type. This dark strain is not frequently encountered by any means and I hope to experiment with it in future. By transferring these larvae to *Ribes sanguinea* (Flowering Currant) I have been able to breed many dwarf specimens, more densely marked than those of normal size.

The wooded areas of Hampshire yield a profusion of Geometridae almost throughout the year, beginning with *Erannis leucophaearia*, a male of which I once secured as early as 5th January, in 1947. I well remember the abundance of *Erannis defoliaria* and *O. brumata* that came to our light on that occasion, and the surprising appearance, at the tip of a twig, of an infant larva of *Philudoria potatoaria*. There appear to be more species of Geometers in the woods in April than in any other month. During daylight the beating-stick will put them up at almost every stroke, notably *Pseudopanthera macularia*, which varies much in ground colour in this area. Tree trunks, of course, should never be passed without a close scrutiny, for something is usually thereon, if only *Ectropis punctulata*. As a matter of fact I once took an extremely good variety of this species, completely unspotted. A multitude of 'Carpetts' and 'Waves' are always there in spring and summer, and *Biston betularia* is common, the dark var. *doubledayaria* Mill. occurring quite freely. The felling of trees and burning of brushwood and bracken have seriously affected the insect population, and a small copse within a few hundred yards of my house which was normally very productive has been felled and cleared for development into pasture land, with the exception of one tree against which a labourer was crushed and killed by a farm wagon many years ago. This tree was cut off a few feet from

the base, above a deeply carved cross, and still stands as a memorial. In this thick and protective copse primroses used to bloom in profusion, and *Biston strataria* and *Ectropis bistortata* emerge therein in early March.

Other woods in the vicinity were equally rich in moths. I recall visiting Stoke Park a few years ago in April, before the massed tree-felling began, when a small party of us worked with light far into the night and were visited by scores of *Orthosia cruda* and *Earophila badiata* and several *Cerastis rubricosa*. The approach to the woods was pathetically unforgettable. Woolly clouds of fog hung over the meadows and thrushes sang in the diminishing daylight. We detected an unfamiliar sound: the hoarse croak of a heron flying high above the adjoining heath. A shot rang out; the great bird fell silent and lifeless. I could have echoed the words of Mark Twain as he described his emotions after shooting a sparrow: "and . . . I couldn't see nothin' for tears".

Following the river-path from Shawford Downs, habitat of so many Lycaenidae, to the water-meadows at Bishopstoke is something to delight the heart of every country-lover. The shimmering silver of miniature waterfalls; the agitated chatter of sedge-warblers in the low overhanging willows; an occasional metallic flash of a kingfisher; dragonflies hovering and hawking over the marshes. In April larvae of *Callimorpha dominula* are to be found in abundance in comfrey and stinging-nettles, and in places where these foodplants are non-existent I have often found them feeding on thistle. Rustic bridges cross the winding river, and the tow-path narrows alarmingly under the low dark railway bridge. In winter, gulls and lapwings feed in large companies; rooks and jackdaws leave these feeding-grounds at almost the same time each afternoon, flying high and eastward to the tree-tops of Park Hills.

Shawford Downs have a magnetic influence on me every summer; it is not only the abundance of 'Blues' in this chalky paradise but the eternal hope of some really good Zygaenids. *Z. trifolii* is not common nor is it variable in the least and the only two unusual specimens I have secured here have had forewings asymmetrical in size. *Z. filipendulae* positively abounds and it is an easy and pleasant occupation to collect handfuls of cocoons; the unwanted imagines are restored to their breeding-ground later. Again, variation is negligible, not a single confluent-spotted specimen ever emerging; but on one occasion I discovered a perfect example of the yellow ab. *flava* Robson (*cerinus* Robson and Gardner) at rest on a grass stem. The following year (1948) out of 508 typical specimens I had one ab. *aurantia* Tutt. Over two hundred cocoons were collected in 1949, and I was again rewarded with one ab. *flava*, the remainder, all typical excepting a few dwarfs, being duly released.

The co-operation of so many non-entomological acquaintances pleases me immensely. Their offerings are often quite useless, but I always try to maintain their enthusiasm and sometimes they are a real asset, especially in a setting so rural where water still has to be drawn from a well (what cool clear water!) and paraffin lamps filled before tea. I remember the girl who brought me a tattered *Smerinthus ocellatus*, apologising for its useless cabinet condition. How right she was, but what a lovely batch of eggs I found next morning! They all mean well: the schoolboy who contributed a live *Herse convolvuli* in a matchbox;

the lady who sent me, from Paris, a few crumpled and disintegrated *Vanessa io* and *Papilio podalirius* in a box that had once contained, according to the cover, the most succulent sweetmeats!

With the help of my very good neighbour who is an ardent beekeeper I have been enabled to make some interesting observations on the life-history of *Galleria mellonella*, the Honeycomb Moth. The product of a single hive can be entirely destroyed by its larvae. As sections of comb were removed in September, each cell was found to contain either a larva or pupa, and adults were emerging at the same time that larvae were feeding in adjacent cells. It would appear that this bee-parasite cannot be counter-parasitized by any other insect, as the cells in which the larvae feed are thinly sealed until emergence. The bees show little sign of aggression and willingly forsake their homes in favour of *mellonella*.

We are all inclined to regard spring, summer and autumn as "the season", which, in effect, is incorrect. Winter is productive, too, though in a lesser degree, and there is field work to be done until we reach another entomological stage, heralded by the sight of the first *Gonepteryx rhamni* awakened from its long sleep—the sign that spring is almost here. We shall see it any day now; perhaps some of us have seen it already. The sailows will be blossoming presently . . .

February 1952.

How I kept my Butterfly Collection in West Africa

By Father TH. MAESSEN.

[By the kind permission of De Heer B. J. Lempke and of its Author we reprint the following interesting paper from the *Entomologische Berichten* of 1st December 1951 (No. 318, p. 379).]

It may be useful for butterfly collectors in tropical countries with a damp climate to know that it is possible, with very little trouble, to set one's butterflies on the day you catch them and to keep them in perfect condition, as set, for an unlimited time. Before I went to the Gold Coast (notorious for its damp climate) I was told by several famous collectors, and read in several books and magazine articles, that it was impossible to keep a collection of butterflies in a damp climate in the tropics. Not knowing any better, I believed them. According to them the only way to keep butterflies was to dry them in the sun, put them in papers, and store them in airtight tins.

However, after having done this for a year I thought it was very dull compared with the way in which we collect at home; so I decided to try if I could form a collection of butterflies set there and then. I got an African negro to make me some glass-covered cases; they were not badly made but not of course so good as the ones which one buys in Europe from dealers in entomological apparatus. So I set to work to improve them. First I took the glass out, put some very soft mastic in the rebate, and then put the glass back in its place. By pressing the glass slowly and evenly the mastic smoothed out every irregularity in the wood and made a perfectly airtight joint. The superfluous mastic was pared off with a knife. Then I replaced the small slats which held the glass in position.

Having no pith or anything soft enough to take pins, with which to line the case, I bought some sheets of cork such as are used for engine gaskets, cut them into strips, and glued them to the bottom of the case. I then covered them with a sheet of paper and the case was ready.

At first I had a lot of trouble with ants but above all with mould, which sometimes destroyed the entire contents of a case. Then I changed my tactics. I bought some paradichlorbenzine and a bottle of carbolic acid (phenol): I took all the butterflies out of the case on a hot dry day and dried both butterflies and cases thoroughly. (You musn't put the case directly in the sun or the wood will split) This done, I put the specimens back in the cases, added some paradichlorbenzine and a small piece of cottonwool, soaked with phenol, on a pin, and at once sealed the lid to the case with melted beeswax, taking care that not the tiniest chink was overlooked. I kept one case apart, binding the lid to the case with adhesive tape; this case was reserved for all the material caught and set after the other cases were sealed. As soon as it was full I waited for a dry day, opened the other cases, put in the fresh specimens in their proper places, according to my classification, left the cases open for half an hour or so to dry them again completely, then closed them and re-sealed them with wax as before.

Since I have adopted this method not a single specimen has been lost or spoiled, and they have kept as fresh as if they had just been taken off the setting-board. I kept them like this for over four years till I went on leave to Europe and I am definitely sure that I could have kept them in this manner for ten years or more.

It is very much nicer and adds greatly to the pleasure of one's hobby if you can set your specimens at once and have them ready to hand for study and classification. Moreover, butterflies are much more easily set when they are fresh than if they are dried and have to be relaxed first of all. This does not apply so much to the wings but to the smaller details such as palpi, antennae, legs, and particularly the tiny but long tails of the African *Lycaenidae*. Once these become dried crookedly it is exceedingly difficult to get them in a nice position again. Also by having your captures before you in glazed cases you can compare specimens, note small variations, sex distinctions, aberrations, even new species which at first sight looked the same as others.

It is not so difficult to take the cases home when you go on leave as might be expected. I transported mine in wooden boxes, in which I put the cases on edge (as one puts books on a shelf) with a sheet of brown paper between them in case a glass might break and being particularly careful that the cases could not move or vibrate. On my arrival in Holland I found that not a single specimen was damaged, not even an antenna was broken; they were all quite perfect.

I should add that the cases made for me in Africa were of ant-proof 'Odum' wood.

Catholic Mission, Kpandu, Gold Coast,
January 1951.

[No doubt Messrs. J. J. Hill & Son, the well-known firm of entomological cabinet-makers, could contrive glazed cases of hard wood (treated

with some insect-deterrent such as 'Cuprinol') with airtight lids. If the wood were varnished it should be possible to ensure an airtight joint between lid and case by the use of a rubber-dressed insulating tape pressed very hard with a small photographer's squeegee having a box-wood roller. Presumably this tape also would have to be treated with an insect-deterrent, unless of course the cases could be kept in a tin-lined box. Perhaps small lumps of solid formaldehyde pinned inside the cases would be a better precaution against mould than liquid phenol.—P.B.M.A.]

Notes on Microlepidoptera

By H. C. HUGGINS.

Oidaematophorus carphodactylus Hübn. In mid-April the larva of the first brood of this 'plume' may be found in the crown of the big rosette of leaves of the Ploughman's Spikenard (*Inula conyza*), feeding on the beginning of the flower-stem. It is a curious little creature, white with blackish plates all down the back, and is quite easy to rear, although an internal feeder, if given sufficient care. I used to turn mine out directly the plant began to become withered, and cut sections of the flower stems springing up on non-infested plants.

These were slightly split and the larva introduced to the opening. It rapidly burrowed into the new juicy stem and fed up very quickly. By this means I reared very much larger specimens than any wild ones I have ever seen. The legs of the larva in the last skin are quite inadequate for any extensive locomotion so in nature it is confined to the original plant, in which the damaged stem is usually aborted and withered and does not provide the rich feeding given by removal to a new one. The little yellow pupa should be carefully removed from the larval habitation, which tends to become mouldy, and placed in a glass-lidded metal box on cotton wool, with a small piece of damp sponge to prevent undue dryness.

Eucosma pygmaeana Hübn. may be taken flying in sunshine round spruces in the last week in April. Where these are grown close together so that green boughs only occur high up it is difficult to obtain, as it frequents the living foliage, but where the spruces are grown singly or on the outside of a wood it is easy enough to get on a warm day, as, even if not flying, it may be beaten out and does not drop in the afternoon. The biggest bag I ever made of this moth was at Stockbury near Sittingbourne in Kent, when an isolated spruce grove was felled and about four o'clock on a sunny afternoon in April the moths were flying over the felled trees by dozens as they had no living ones to go to, and were of course easy to net. It is still common in the Breck in the peculiar hedges made on some estates by stunting the spruces by cutting them back, and in 1949 I beat several from a row of Scots firs. These had probably wandered from a neighbouring spruce.

The pupa of *Laspeyresia zebeana* should be looked for in the Breck (possibly now elsewhere) in the last week in April. It feeds in a large resin-gall it makes on the side branches of the larch, usually at a fork a foot or so from the tip. This moth has a two-year life cycle so only the large galls, often an inch across, should be taken, as the smaller ones

will contain young larvae with nearly a year to feed. Although the moth has a two-year cycle pupae occur every year, and not every other year as in some biennial species. The cut boughs may be shortened to a few inches long and placed in damp sand, and the perfect insects will emerge with no further attention in the second and third weeks in May. This moth does not appear to do any serious damage, as it only appears to attack the side shoots, which it does not kill, and these are in any case trimmed off when the tree is felled. I have not noticed any attacked boughs more than ten feet from the ground, most being from five to eight feet up. *Zebeana* seems to be plentiful in many larch groves between Thetford and Mildenhall.

Notes and Observations

LEPIDOPTERA AT WESTON-SUPER-MARE.—On 16th December a freshly emerged specimen of *Plusia gamma* L. came to light in my garden, which seems to be rather a late date. As regards the common early species, the following are the dates when I first noticed them during the last few weeks:—*Phigalia pedaria* Fab., 24th December; *Theria rupicaprararia* Schf., 19th January; *Erannis leucophaearia* Schf., 2nd February; *Erannis marginaria* Fab., 19th February; *Alsophila aescularia* Schf., 19th February. All these dates are I think average ones with the exception of *Phigalia pedaria*, which is rather earlier than usual.—C. S. H. BLATHWAYT, 27 South Road, Weston-super-Mare. 25.ii.52.

GYMNOSCELIS PUMILATA HUB. IN FEBRUARY.—On 13th February I caught a specimen of this 'Pug' in my house. Is not this an unusually early date for the species?—F. W. BYERS, 59 Gurney Court Road, St. Albans, Herts. 25.ii.52.

[I feel sure that *G. pumilata* Hub. has been recorded in February at least once, but cannot remember the reference. I think I saw one sitting on a door in Westbourne Terrace, London, in February some years ago.—E.A.C.]

HYMENIA RECURVALIS IN SURREY.—In a letter to *The Times* on 15th March Mr. E. W. Classey reported that a specimen of this moth was taken at light by Mr. Robin Mere at Haslemere, Surrey, on 6th September 1951.

DECREASE OF NYMPHALIS POLYCHLOROS L. IN KENT.—The Large Tortoiseshell butterfly was reported more frequently in 1946, 1947, and 1948 from Kent than it had been for over 40 years. However, in 1949 there was a noticeable decrease in the number of reports for the county, and in 1950 there were fewer still. By 1951 it had become decidedly rare in Kent, and I am only aware of a single specimen being observed that year—this was at Sandwich in early September, but the specimen was not taken. My thanks are due to Mr. D. Batchelor for kindly supplying me with this sole record of the existence of *N. polychloros* in Kent in 1951. It will be interesting to hear if there are any reports of its appearance in Kent in 1952.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 9.iii.52.

EARLY OCCURRENCE OF IMMIGRANTS IN 1952.—During the last fortnight or so the weather in the Kendal district has been one of mild days with a south-westerly air stream. My mercury vapour moth-trap has been operated sporadically just to ascertain what species were about. All the expected species have been noted:—*Theria rupicaprararia* Schiff., *Erannis leucophaearia* Schiff. (very common and variable), *Erannis marginaria* Borkh. (scarcer than usual), *Alsophila aescularia* Schiff., *Phigalia pedaria* Fab., and *Biston strataria* Hufn.

On the evening of 3rd March my trap was in operation from dusk until 11 p.m. There were few moths about so it was surprising to find the biggest haul was of *Plutella maculipennis* Curt. Of this species there was about a dozen specimens. On the night of 8th March another notable migrant put in an appearance in the form of two specimens of *Nomophila noctuella* Schiff.

There are odd records of early occurrences of both these species (as summarised in the paper by Williams *et al.* in *Trans. R. ent. Soc. Lond.*, Vol. 92), but I know of no records from this district of such early occurrences. Perhaps observers better placed than myself will have observed these two migrants on the move and may also have noted other migrant species.—DR. NEVILLE L. BIRKETT, 3 Thorny Hills, Kendal. 11.iii.52.

VANESSA CARDUI L. IN MARCH.—On 2nd March, a warm sunny day, I found a newly emerged male *Vanessa cardui* L. resting on an apple-tree in my garden. It allowed several minutes of close observation before taking wing. On 4th March a *V. cardui* was seen in flight in the same place.

To-day, 10th March, it has been very warm and sunny, and several *V. cardui* have been sunning themselves on the rockery and visiting shrubs of *Daphne mezereum* in competition with a few hibernated *Nymphalis io* and *Aglais urticae*. All the *V. cardui* appear to be small; two measured were both 56 mm. from tip to tip and all appear newly emerged. Is not this a very unusual time of the year for the appearance of this butterfly?—B. C. BARTON, Castle Mead, Highcliffe, Christchurch, Hants. 10.iii.52.

VANESSA CARDUI L. IN MARCH.—During yesterday, 4th March, my wife saw a specimen of *V. cardui* flying slowing round the garden. It came to rest on her clothing, 'sunning' itself for a few moments before flying away, thus identification was unmistakable. The incident was forgotten until next day, 5th March, when I also saw a specimen of *V. cardui* flying slowly along Sea Road, Boscombe. Is this an unusually early date? Is it possible that they have hibernated here or are they early immigrants? *V. cardui* was not very common in this area during 1951.—H. J. TURNER, 33 Pine Avenue, West Southbourne, Hampshire. 6.iii.52.

VANESSA CARDUI L. IN MARCH.—This morning, 12th March, a rather faded *Vanessa cardui* was flying about in my garden here in Hertfordshire.—P. B. M. ALLAN, 4 Windhill, Bishop's Stortford, Herts. 12.iii.52.

VANESSA CARDUI L. IN MARCH.—You may be interested to know I took a specimen of *Vanessa cardui* L. at rest on the trunk of a tree at Effingham, Surrey, yesterday (15th March). My friend J. W. Saunt

writes me from the Isle of Wight that he saw one on 5th March and has seen eight in all. Several other people in the Island reported having seen specimens, and one person said he had seen over a hundred!—S. WAKELY, 26 Finsen Road, Ruskin Park, London, S.E.5. 16.iii.52.

EARLY IMMIGRATION OF *VANESSA CARDUI* L.—There is a strong indication that this will be a peak year for *Vanessa cardui*. Several have already been reported from the New Forest area and one was taken here by Miss A. Philpott on 15th March in the somewhat colourless condition peculiar to most butterflies after migratory flight.—PAUL H. HOLLOWAY, Warwick House, Fair Oak, Eastleigh, Hants. 18.iii.52.

[There have been several other early records of *V. cardui* this year. Mr. Gerard Marillier saw one near Petworth, Sussex, on 11th March and writes (*in lit.*) that it was "bright coloured but rather torn—both wing-tips had gone—flying beside a wall on which it settled, giving me a good view of it." A correspondent of *The Times* (13th March) reported one seen at Wareham, Dorset, on 5th March "flying in a northerly direction, at a point not more than four miles from the sea". On 2nd March one was seen at Plymouth and on the 3rd March others at Hastings, Fairlight, and three near Sittingbourne, Kent. On 4th March one was noticed at Freshwater, Isle of Wight, and one at Stodmarsh, Kent.

A further Note in *The Times* on 21st March reported that up to March 12th no less than 187 specimens, "spread all along the coasts from Essex to County Cork", had been notified to the Secretary of the S.E.U.S.S. Other reports had been received from Penn, Buckinghamshire (8th March), Brockenhurst and near Fordingbridge, Hampshire (10th March), Esher, Surrey, Findon, Sussex, and near Aberystwyth, Cardiganshire (11th March), Bognor Regis, Sussex, and Cranborne, Fareham, Ringwood, and Barton-on-Sea, Hampshire (12th March).

Williams, Cockbill, Gibbs and Downs (*Studies in the Migration of Lepidoptera*, Trans. R. ent. Soc., 1942; 92: I: 101-283) give in their Table 3: "Monthly total records . . . of British Immigrants, 1824-1939" (page 109) the following figures for *Vanessa cardui* L. in the early months of the year:—January, 4; February, 10; March, 119. At page 114 these writers state: "It has occurred . . . in every month of the year . . . There are, however, very few records during the winter months December to February. The grand total of records was 41,535 insects, and of these only 18 were reported in the winter months, in 11 out of 115 years."—ED.]

DIPTERA

Autumn Diptera visiting Fungi

By JAMES EDWARDS, B.Sc.

In the autumn of 1951 when collecting in Dimmingsdale, North Staffordshire, I noticed that the fly population on and around quantities of *Polystictus versicolor* Fr. growing on tree-stumps outnumbered those visiting similarly-placed groups of a *Russula* species. For further observation two tree-stumps were chosen; one, beech, bearing both the *Poly-*

stictus and *Russula*, and the other, an oak stump, bearing only *Polystictus*.

Between 19th September and 20th October visits were made to these stumps in fine weather during which flies visiting the fungi were collected, each stump being under observation for a total time of between six and seven hours.

Flies taken on the *Polystictus* on the oak stump were all Clythiidae:—

- 19.ix.51. 1 ♂ *Callomyia amoena* Mg., 1 ♀ *Agathomyia antennata* Ztt.,
7 ♀ *Clythia modesta* Ztt., 2 ♀ *Clythia fasciata* Mg.
6. x.51. 1 ♀ *Agathomyia antennata* Ztt., 1 ♀ *Clythia infumata* Hal.,
2 ♀ *Clythia picta* Mg.
7. x.51. 1 ♀ *Clythia picta* Mg.
19. x.51. 1 ♀ *Agathomyia antennata* Ztt., 1 ♀ *Clythia picta* Mg.

The flies visiting the stump bearing both *Polystictus* and *Russula* were a more numerous and varied population with a preponderance of Mycetophilidae. The following species were taken:—

On *Polystictus*.

- 19.ix.51. 4 ♀ *Bolitophila cinerea* Mg., 1 ♂ *Mycomyia maura* Wlk.,
1 ♀ *Neoempheria pictipennis* Hal., 1 ♂ *Acnemia nitidicollis*
Mg., 1 ♀ *Apoliphthisa subincana* Curt., 1 ♀ *Rondaniella*
dimidiata Mg., 1 ♂ *Dynatosoma reciprocum* Wlk., 2 ♀ *Myce-*
tophila signatoides Dz., 1 ♀ *Mycetophila trinotata* Staeg.,
1 ♂ *Sciara autumnalis* Winn.
24.ix.51. 1 ♂ *Cricotopus biformis* Edw.
3. x.51. 2 ♀ *Mycetophila trinotata* Staeg.
6. x.51. 1 ♀ *Rondaniella dimidiata* Mg., 1 ♀ *Leia cylindrica* Winn.,
3 ♂ *Dynatosoma fuscicorne* Mg., 1 ♂ *Mycetophila lineola*
Mg., 1 ♂ *Mycetophila fraterna* Winn., 1 pair *Sciara flavipes*
Mg. (in cop.).
19. x.51. 1 ♀ *Apoliphthisa subincana* Curt., 1 ♀ *Rondaniella dimidiata*
Mg., 1 ♂ *Dynatosoma reciprocum* Wlk.

On *Russula*.

- 19.ix.51. 1 ♂, 1 ♀ *Nemopoda nitidula* Fln., 1 ♂ *Helomyza variegata*
Lw., 2 ♂ *Helomyza bicolor* Ztt., 1 ♂, 1 ♀ *Allophyla atricornis*
Lw., 1 ♀ *Anthomyia pluvialis* L.
24.ix.51. 1 ♂ *Stratioborborus fimetarius* Mg., 1 ♀ *Phaonia erronea*
Schnbl., 1 ♀ *Phaonia errans* Mg., 1 ♀ *Hylemya variata* Fln.
3. x.51. 1 ♀ *Geomyza bipunctata* Fln., 1 ♀ *Phaonia pallida* F.
6. x.51. 1 ♂ *Neuroctena anilis* Fln., 1 ♀ *Helomyza variegata* Lw.,
2 ♂ *Helomyza bicolor* Ztt., 1 ♂ *Clusia flava* Mg., 1 ♂, 1 ♀
Diastata inornata Lw.
19. x.51. 1 ♀ *Geomyza bipunctata* Fln.

When observation began on 19th September the *Russula* fungus was already beginning to decompose. In this state it is unattractive to Fungus-gnats for oviposition which explains why no Mycetophilidae were found on it then or later.

I can suggest no reason why the *Polystictus* on oak was preferred by the Clythiidae unless these flies favoured the much drier and warmer conditions afforded by the position of that particular oak stump.

Rondaniella dimidiata Mg. has not been found in Staffordshire previously; one of the females taken has been presented to the British Museum (Nat. Hist.).

81 Hassam Parade, Newcastle, Staffs.

COLEOPTERA

The Genus *Aphodius* Ill. in Cumberland

By F. H. DAY, F.R.E.S.

This genus of the Scarabaeidae is a well-defined one and for the most part the numerous species are readily separated from one another. They agree in one respect in that all are dung-feeders, especially favouring the droppings of horses, cattle, sheep and, where present, of deer. A heap of fresh manure has a great attraction for them and they may sometimes be seen in great numbers on country roads flying to heaps freshly dropped by passing animals. Exceptionally one or two species may be found in decaying fungi, and light and the lepidopterist's sugar patches are sometimes attractive to others. The genus is an extensive one; in Britain forty species are recognized, of which twenty-nine have been found in Cumberland. Because of their feeding habits it is well to wash the specimens in clean water before mounting them on card. Below I list the species found in this county, following the nomenclature of *A Check List of British Insects* by Kloet and Hincks, 1945.

Aphodius erraticus (L.).—A fairly large and distinct species which I have only found sparingly near Carlisle, Keswick, and in the valley of the River Eden.

A. subterraneus (L.).—A species which is little known in the north of England. I have not met with it myself in Cumberland, but it was recorded from Rockcliffe Marsh on the Solway Firth by T. C. Heysham in Stephen's *Illustrations*, vol. 3, Mandibulata, p. 188.

A. fossor (L.).—Fairly common in pasture fields in the districts round Carlisle, Penrith, Brampton, and elsewhere.

A. haemorrhoidalis (L.).—Decidedly scarcer, my only record is from the Eden Valley.

A. aestivalis Steph. (nec *foetens* auct.).—Not at all scarce in Cumberland, but must be looked for carefully in the swarms of the next species which occur everywhere.

A. fimetarius (L.).—Very common, ranging to the tops of the highest mountains.

A. scybalarius (F.).—A local species which I have only found on the coast at Seascale in dry cow plats.

A. ater (DeG.).—Common, especially in the Pennines and Lake District in sheep droppings.

A. constans (Duft.).—A single example in my garden in Carlisle probably introduced in manure.

A. granarius (L.).—Another species little known in the north of England, our only record for Cumberland being one by Heysham in Stephen's *Illustrations*, vol. 3, p. 198.

A. nitidulus (F.).—Fowler says this species does not occur in the north of England, but I have taken it rather freely on the sandhills at Drigg in dry cow-dung.

A. sordidus (F.).—Another species recorded by T. C. Heysham which has not occurred again. Locality, Rockcliffe.

A. rufescens F.—Local, but common at times. I have taken it in localities on the coast, near Carlisle and in the Eden Valley.

A. lapponum Gyll.—Abundant in sheep-droppings in mountain regions such as are provided by the Pennines and the Lake District, where it is the dominant *Aphodius*.

A. foetidus (F.).—Scarce, but I once took a number in sheep-dung in Sty Head Pass in the Lake District.

A. porcus (F.).—Also scarce, a few singly on the wing.

A. pusillus (Hbst.).—Not very frequent, but has occurred near Carlisle, Brampton and in the Eden Valley.

A. merdarius (F.).—Common and widely distributed, sometimes in great numbers on country roads in dung.

A. distinctus (Muell.) = *inquinatus* (Hbst.).—Moderately common near Carlisle, on the coast and the lower part of the eastern fells, often in flood refuse in the river valleys.

A. tessulatus (Pk.).—Occurs in sheep-dung in late autumn and winter on Wan Fell and near Talkintarn under the Pennines.

A. conspurcatus (L.).—Scarce, usually found singly in flood refuse by the rivers Eden and Petteril.

A. sphacelatus (Pz.).—Quite the most abundant *Aphodius* in Cumberland.

A. prodromus (Brahm).—Also common.

A. contaminatus (Hbst.).—Fairly common.

A. obliteratus Pz.—Local in the Eden and Caldew valleys.

A. luridus (F.).—Frequent at Keswick, Silloth and elsewhere in cow-dung usually; black specimens sometimes occur.

A. rufipes (L.).—Often taken on the wing at light; generally distributed.

A. depressus (Kug.).—Not uncommon at Seascale, Talkin, High Pike and other places.

A. borealis (Gyll.).—Silloth, scarce in decaying seaweed.

Blackwell Lodge West, Carlisle. 12.ii.52.

RECORDS OF STAPHYLINUS SPP.—Although none of the following species of large 'rove-beetles' are great rarities, they are perhaps uncommon enough to warrant a note of their capture. All records are of single specimens unless otherwise indicated.

Staphylinus pubescens Deg.—Darenth Wood, beaten off a bush in hot sunshine, vii.47 (the only record in the Victoria County History of Kent, 1908, is 'Blackheath'); Oxshott, Surrey, in half-dry horse-dung in pinewoods, x.50; near Bayford, Herts., under dry horse-dung, 17.ii.45. It seems to occur very sparingly in the south-east; in earlier years I took it twice in Surrey, on the chalk, in carrion and cow-dung.

S. stercorarius Ol.—The Lizard, Cornwall (on the cliffs above Kynance Cove, a few with *S. (Ocypus) aeneocephalus* Deg. and *siculus* Stierl.), ix.51. Despite its name, it does not frequent dung.

S. latebricola Grav.—Ham Street Woods, Kent, in wet moss at edge of pond with *Agonum livens* Gyll. and *Corymbites nigricornis* Panz., v.50; Otford Downs, Kent, running on path, v.50. I took it earlier in Surrey and Sussex on the chalk (see *Ent. mon. Mag.*, 1946, 82: 100).

S. parumtomentosus Stein.—Totland Bay, I.o.W., running at foot of cliff, v.48; Oxshott, under stone in gravel pit, v.51. Always a rarity to me; I took two in North Somerset years ago.

S. erythropterus L.—New Forest, Hants., running on a bog, viii.49. Not uncommon farther north, but apparently rare or very local in the south.

S. (Ocybus) similis F.—Westhumble, Surrey, in hilly pasture on chalk, v.48; Otford Downs, running on chalky path, v.50.

S. (O.) fuscatus Grav.—Port Victoria (Thames-Medway estuary), Kent, running on concrete in hot sun, 30.v.48; the only example I have so far encountered.

S. (O.) cupreus Rossi.—Tubney, Berks., 2 in sandy field, vi.44.

S. (O.) brunnipes F.—Galley Hill and Waltham Abbey, Essex, sparingly under stones, at roots of trees, etc., in spring, 1941 and subsequently; and in some numbers beneath willow bark, iii.48. I have also taken it singly in Kent and Inverness-shire.

S. (O.) pedator Grav.—Arundel Park, Sussex, in moss on chalk, and Goodwood, Sussex, 3 under roadside stones, vii.45; Darenth, Kent, under stone in chalk pit, vi.49.

A. A. ALLEN,

The Tiled House, 63 Blackheath Park, London, S.E.3. 13.ii.1952.

Fifty Years Ago

(From *The Entomologist's Record* of 1902)

Of recent importations (apparently) which have successfully established themselves, two or three deserve mention. *Callimorpha hera*, or as we shall unfortunately henceforth have to call it, *C. quadripunctaria* Poda—is still spreading in Devonshire, and there seems now a good chance of getting a series almost anywhere between Dawlish and Exeter, and perhaps, also, in other parts of the county. *Plusia moneta* is also extending its range in various directions, and one or two of us have had the pleasure of welcoming it to our suburban gardens. Whether *Ithysia* (*Nyssia*) *lapponaria* ought to be referred to under this heading, and if so, how its importation came about, I do not know; it is, of course, possible that it has been very much overlooked. At any rate, it is interesting to learn (*Entom.*, xxxiv, p. 255) that Mr. Cockayne, of Sheffield, has found out how to work for its larvae in Perthshire, thus following up the success which Mr. W. M. Christy achieved a few years ago. The insect is sometimes regarded as a boreal variety or race (or “Darwinian species”) of the *I. pomonaria* of central and southern Europe, but I am not in a position to express any critical opinion on the subject

Apparently, still rarer species with us are *Mellinia ocellaris*, of which our member, Mr. Burrows, has taken and shown us a specimen; *Sesia* (*Aegeria*) *andreniformis*, taken by Mr. Huggins at Gravesend on July 17th; and *Parascotia* (*Boletobia*) *fuliginaria*, captured by my friend Mr. R. W. Robbins, at Walthamstow, on July 29th. Probably we have still a great deal to learn concerning the habits of these three species; possibly, also, we do not show sufficient zeal in examining “the old rotten woodwork in the cellars and other structures along the banks

of the Thames" to secure good series of the last-named, these being the favourite haunts of the fungus-feeding larvae of this interesting species. Mr. Robbins' specimen, however, was taken out-of-doors, flitting round a sugared post in the evening; and on the Continent I believe its occurrence in the open is quite usual. Is this really another migrant, introduced from time to time by shipping, and only able to thrive when protected from our climate within walls . . . ?—LOUIS B. PROUT.

Current Literature

THE FRESHWATER LIFE OF THE BRITISH ISLES. By JOHN CLEGG. Sm. 8vo. ($6\frac{3}{4} \times 4\frac{3}{4}$). Illustrated: 16 colour and 51 half-tone Plates and 95 line drawings; pp. 351. London: Frederick Warne & Co., Ltd. Price 21s.

This most readable account of the animals and plants living in freshwater is a very welcome addition to the 'Wayside and Woodland' series of volumes on Natural History. It should be in the library of every entomologist interested in aquatic insects—and indeed, as a study in the adaptations of animals to the conditions of their environment, there is much to interest every field naturalist whatever his, or her, leanings. As a reference book and guide to those taking up the study of aquatic life, and to Natural History Societies, this well-produced volume cannot be too strongly recommended.

Of the 317 pages of text, 57 are devoted to the twelve Orders of insects having aquatic representatives. The lucid accounts of the insects, their metamorphoses, egg-laying and feeding habits, and varied ways of life in, or on, the water are well illustrated by 16 full-page half-tone plates, the clarity of which are a credit to the book, and by 16 line drawings in the text.

Some of the scientific names will be unfamiliar but happily the older (and more familiar) names follow in brackets, and the memorising of Latin and Greek names—which some of us find so difficult a task—is made easier by the inclusion of the root-derivations, with meanings, in many instances.

The text is followed by an Appendix on Hydrogen ion concentration and pH, another on Anglers' names for aquatic insects and six pages of Bibliography.

An excellent index completes the volume.

I.R.H.A.

A NECESSARY CORRECTION.—In the *Catalogus Lepidopterorum*, 1932, Pars 53, p. 312, by G. Talbot under *Euchloë cardamines* L. appears the entry ab. *flavosignata* Closs., *Int. Ent. Z.*, Guben, 15, p. 83 (1921) = *saxonia* Her. Roger Verity in his new book, *Le Farfalle Diurne d'Italia* also gives *flavosignata* Closs as an aberration of *Euchloë cardamines* L. Actually it is an aberration of *Arctia caja* L.

The editor of the journal must bear some of the responsibility for this error, because he has not made the transition from *cardamines* to *caja* clearer, but most of the blame must be borne by Talbot and Verity. As both the *Catalogus* and the *Farfalle* are important works of reference the mistake cannot be allowed to stand uncorrected.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

EDITED BY

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Aberrations of British Macrolepidoptera

By E. A. Cockayne, D.M., F.R.C.P.

[The following aberrations are in the Rothschild-Cockayne-Kettlewell collection in the British Museum.]

Spaelotis ravidus Schiffermüller ab. **semiconfluens** ab. nov.

The orbicular and reniform stigmata are united.

Type ♂ : Rainham, Essex, 1894, Burrows.

Diarsia festiva Hübner ab. **roseovirgata** ab. nov. (Fig. 1).

The ground colour of the forewing is greyish ochreous with few markings; there is a conspicuous transverse band, greyish lilac with a tinge of pink, between the outer of the two blackish lines bounding the median area and the pale line external to the subterminal. The hindwing is normal.

Type ♂ : Rannoch, vii.1900, E. A. Cockayne.

Diarsia festiva Hübner ab. **fuscolimbata** ab. nov. (Fig. 2).

The ground colour of the forewing is pale brownish ochreous and is dusted with black scales from the external of the two lines bounding the median area to the termen; the normal markings are visible; there is also slight dusting with blackish scales between the basal and antemedian lines.

Type ♂ : Rannoch, 1937, H. B. D. Kettlewell.

Diarsia festiva Hübner ab. **nigrobasalis** ab. nov. (Fig. 3).

The area on the forewing between the basal and antemedian lines is powdered with black scales and the anterior half of the lines themselves is thick and black.

Type ♂ : Rannoch, vii.1903, E. A. Cockayne.

Diarsia rubi Vieweg ab. **semiconfluens** ab. nov.

The posterior or inner marginal ends of the orbicular and reniform are united.

Type ♂ : Rannoch, 1937, H. B. D. Kettlewell.

Amathes castanea Esper ab. **albida** ab. nov.

The forewing is greyish white entirely without markings, the reniform is only just visible and without the usual dark mark in the posterior or basal part.

Type ♀ : Aberdeen, F. W. Buchan. (Bright coll.) Rothschild coll.

Amathes depuncta Linnaeus ab. **obsolescens** ab. nov. (Fig. 4).

Forewing—pale greyish ochreous, the two black dots at the base and the three bordering the antemedian line present; the reniform and orbicular faintly marked and with no dark mark between them; the median shade and postmedian line absent; the subterminal line present and the row of dots internal to it, from these dots to the termen the nervures are darkened.

Type ♂ : Loc. incog. 23.vii.1895, Warren. Burrows coll.

Amathes c-nigrum Linnaeus ab. **albinotica** ab. nov. (Fig. 5).

Head, thorax, and abdomen very pale grey; forewing pale blue grey, in the male flushed with a slight rosy hue in the median area, along the costa, and in the posterior half of the wing; the stigmata and the usual conspicuous black mark touching them are absent. Hindwing—greyish white.

Type ♂: Alton, Hants., 22.viii.1949. (no. 2717) H. S. and P. J. Robinson. B.M., 1951-3.

Allotype ♀: Alton, Hants., 14.viii.1949, H. S. Robinson. (Classey coll.) Cockayne coll.

These two remarkable albinos were taken in the U-V light trap with many thousands of normal specimens. A similar albino is recorded, taken in Wicken Fen, 21.viii.1946, by J. A. Walker (*Proc. S. Lond. Ent. and N.H. Soc.*, 1946-1947, 46).

EXPLANATION OF PLATE V.

- Fig. 1. *Diarsia festiva* ab. *roseovirgata*. ♂. Type.
 Fig. 2. *Diarsia festiva* ab. *fuscolumbata*. ♂. Type.
 Fig. 3. *Diarsia festiva* ab. *nigrobasis*. ♂. Type.
 Fig. 4. *Amathes depuncta* ab. *obsolescens*. ♂. Type.
 Fig. 5. *Amathes c-nigrum* ab. *albinotica*. ♂. Type.
 Fig. 6. *Amathes alpicola* ssp. *alpina* ab. *rufistigma*. ♀. Type.
 Fig. 7. *Anaplectoides prasina* ab. *effusa*. ♀. Type.
 Fig. 8. *Anaplectoides prasina* ab. *leucozona*. ♀. Type.
 Fig. 9. *Anaplectoides prasina* ab. *masseyi*. ♀. Type.
 Fig. 10. *Triphaena comes* ab. *albescens*. ♀. Type.
-

Amathes alpicola Zetterstedt ab. **uniformis** ab. nov.

There is a complete absence of the usual black or blackish brown markings on the forewing. These are replaced by rufous or in some examples the rufous scales are mixed with dark brown ones; the row of black marginal dots remains. The allotype and one other have confluent stigmata.

Type ♂: Rannoch, 1916, A. Horne. Cockayne coll.

Allotype ♀: Rannoch, 1892, G. Clarke. Christy coll.

Paratypes: 3 ♂♂, 3 ♀♀: 2 ♂♂ Rannoch, A. Horne. Cockayne coll.; 1 ♂ Rannoch, 1888, W. M. Reid. Cockayne coll.; 1 ♀ Rannoch, vii.1912, bred by L. W. Newman (Bright coll.) Rothschild coll.; 2 ♀♀ Rannoch, 1916, A. Horne. Cockayne coll.

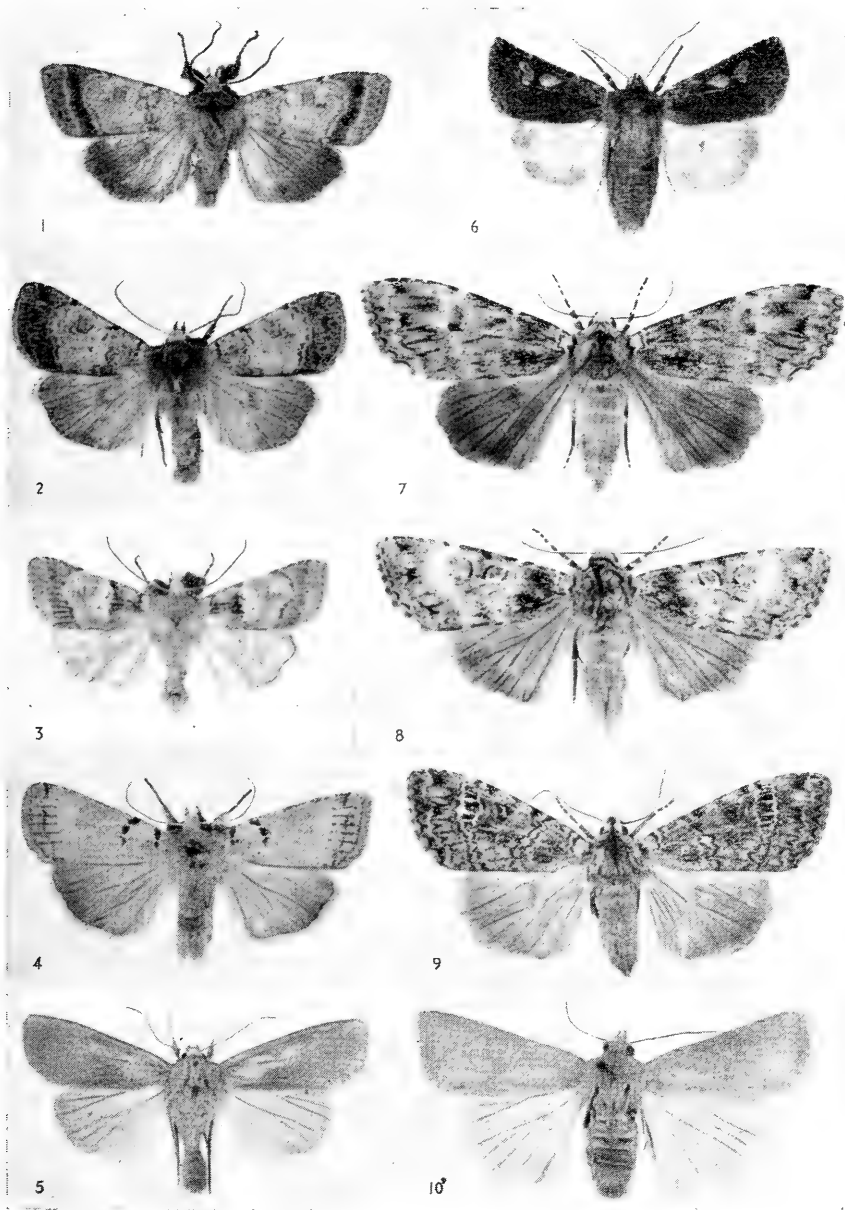
Amathes alpicola Zetterstedt ssp. *alpina* Stephens ab. **rufistigma** ab. nov. (Fig. 6).

The ground colour of the forewing is a uniform blackish brown with the following markings visible, blackish postmedian and subterminal lines, a black mark between the reniform and orbicular, two oblique black lines internal to the orbicular, and a broad black stripe running from the base to the termen and lying just below the median nervure and nervure 2; the reniform and orbicular stigmata are pale rust colour and contrast strongly with the dark ground.

Type ♀: Rannoch, Clark. Bought at Stevens, 1889. Sydney Webb coll. Rothschild coll.

Anaplectoides prasina Schiffermüller ab. **effusa** ab. nov. (Fig. 7).

Forewing—ground colour green; none of the usual markings are sharply defined; the stigmata both lack the usual sharp black outline and all blackish transverse lines are obsolete or nearly so except the



subterminal, which is present; the nervures running from the row of black dots to the subterminal are marked with blackish scales.

Type ♀ : Bude, Cornwall, 6.vii.1907, L. A. E. Sabine. Rothschild coll.

Anaplectoides prasina Schiffermüller ab. **leucozona** ab. nov. (Fig. 8).

Forewing—ground colour green; basal area dark brownish green; ante- and postmedian lines absent; a narrow dark green line runs from the costa to the orbicular and another from the reniform to the inner margin; the orbicular has a narrow black ring round it and a greenish central spot surrounded by whitish; the reniform has a very narrow black ring round it, narrowest on the distal side, and one greenish dot in the upper and another in the lower part; the subterminal line is dark green with a blackish spot between 4 and 5; the subcostal and median nervures are white; nervures 3 and 4 are white and the space between them white or whitish as far out as the outer row of black dots internal to the subterminal line; the ground between the dark basal area and the inner row of black specks external to the reniform is whitish green. The pale area in the middle of the wing and the absence of black scales in and around the stigmata give it a most unusual appearance and it appears to have a broad whitish transverse band proximal to the orbicular and another distal to the reniform.

Type ♀ : N. Cornwall, vi.1904, F. C. Woodforde. Bankes coll.

Anaplectoides prasina Schiffermüller ab. **masseyi** ab. nov. (Fig. 9).

Forewing—ground colour brownish green with the usual lines distinct; the orbicular and reniform are indistinct, but between them is a black mark; the distal side of the reniform is whitish with a tinge of ochreous in the middle and the outer limit of the usual pale area external to the reniform is of the same colour forming a whitish ochreous line; the space between these two lines is black crossed by two parallel whitish ochreous longitudinal lines with a much narrower white one above and below. The insect has an unusual mottled appearance and the wings are rather shorter than usual.

Type ♀ : Abbot's Wood, Sussex, 1892. (Massey coll.) Cockayne coll.

Triphaena comes Hübner ab. **albescens** ab. nov. (Fig. 10).

Head, thorax, and forewings whitish fawn with a pinkish tint; stigmata and subterminal line just visible being of the same colour but slightly darker. Hindwing—whitish with a very faint yellow tint; the usual black band replaced by very pale grey. Abdomen very pale. This is a remarkable albinistic form.

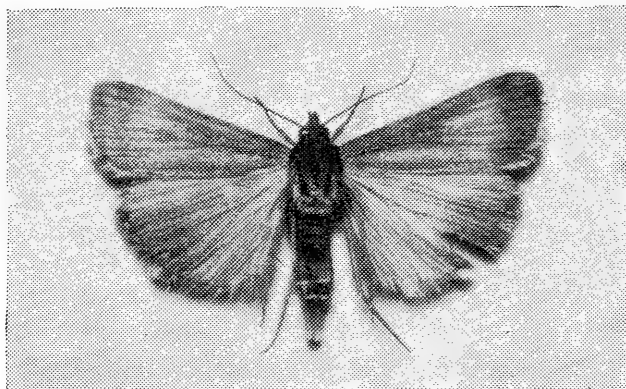
Type ♀ : Dover, bred 20.vi.1898 by H. D. Stockwell. Bankes coll.

Tathorhyncus exsiccata Lederer in South Devon

By FRANK H. LEES.

The night of 20th March was exceptionally mild in Maidencombe. During the early part of the evening it almost looked as though the light in my porch (just below the window in which I fix my moth-trap) was drawing insects away from the latter. To open one's front door at 8.15 p.m. on a March evening and pick off the porch walls a *Plusia ni* ♀

and 4 *Laphygma exigua* is an experience that would surprise most lepidopterists. At 10.0 p.m. when I switched off the porch light the thermometer indicated 55° F. and by morning there was a goodly assembly in the trap. I counted 278 of 19 species which included another *Plusia ni* ♀, 2 more *Laphygma exigua* and a stranger that baffled me completely. At rest it suggested a sort of negative *Leucania l-album* at first, but on



[enlarged: the alar expanse of this specimen is 32 mm.]

setting it, misled by its slender build, I thought it might be a pyrale! Unfortunately, in setting it, I damaged one of the underwings—a trace of *Plusia ni*'s honey and water on my forceps came in contact as I was drawing out a leg, and that was that. Mr. A. L. Goodson identified the species as *Tathorhyncus exsiccata* from a drawing I

sent him and has now examined the insect itself. Owing to difficulties in lighting the object, the photograph shows the heavy marginal shade unequally on the right and left sides, but I think the picture will enable anyone to identify the species if they have had the good fortune to take it.

Tathorhyncus exsiccata Lederer—a Noctuid new to the British List

By E. A. COCKAYNE, D.M., F.R.C.P.

After examining the sketch of the moth taken by Mr. Frank Lees in his light trap on the night of 20th March 1952 and regarded by him as a Pyrale, Mr. Dowsett said he did not think there was any Palaearctic Pyrale which resembled the picture. Mr. A. L. Goodson said he thought it was a Noctuid and after a brief pause added the genus is *Tathorhyncus*. Comparison with the figure of *Tathorhyncus exsiccata* Lederer in Seitz and the short series in the Tring Museum left us in no doubt that he was right. This species, not recorded before from Britain and originally described from a Syrian specimen, is

Tathorhyncus exsiccata Lederer (*Verh. zool.-bot. Ges. Wien*, 1855, 5: 204, Pl. 2, fig. 12) = *vinctalis* Walker.

It occurs in Italy, Cyprus, Syria, Algeria, Egypt, Aden, the Canary Isles, and throughout India, and appears to be continuously brooded, for Tring specimens are labelled February, March, April, May, June, July, and November. The larva is said to be unknown, but the species of *Autophila* its nearest allies have slender larvae which feed on various papilionaceous plants.

The photograph reproduced above shows the appearance of the upper side. The colour of the forewings is greyish brown; the orbicular and reniform stigmata are small and paler than the ground with a conspicu-

ous black streak joining them and a small black dot just external to the reniform; there is another black streak at the base and a broad blackish brown border. The hindwing is paler with a broad blackish brown border which does not reach the anal angle. The under side is whitish with a conspicuous blackish brown border on both fore and hindwing and no other marking. Its closest ally is *Autophila dilucida* Hübner, which has a very similar under side. In the British list it would precede *Lygephila* (*Toxocampa*) *pastinum* Tr. and *craccae* Fab.

Its capture in the moth trap with two *Plusia ni* Hübner at the time when a large immigration of *Vanessa cardui* Linnaeus, *Laphygma exigua* Hübner, and *Plusia ni* Hübner was taking place makes it almost certain that it formed part of the same migration and was not imported by human agency.

Sterrha aversata L.: Some further notes on the genetic relationship of the plain and banded forms

By C. N. HAWKINS, F.R.E.S.

In *The Entomologist* for February 1937 (Vol. 70: 25) under the name *Ptychopoda aversata* L. I gave some account of the breeding and genetics of this species and stated some reasons for believing that the factor for banding was a simple dominant, but that owing to failure of suitable emergences it had up to then been impossible to obtain a Spring pairing between a bred banded male and a bred banded female as I had hoped to do. I also mentioned that from a pairing obtained on 28th May 1936 between a bred male and a bred female of the plain form 64 imagines were bred by Dr. E. A. Cockayne and myself in August and September, all of the plain form, and that some 30 larvae insisted on hibernating but that it was not proposed to proceed any further with these hibernators as they seemed unlikely to affect the results already obtained. As a matter of fact the hibernators were kept, but little or no attention was paid to them till the following Spring when it was found that two only had survived, of which 1 failed to pupate properly and died and the other pupated in May 1937 and produced a female of the plain form in June 1937, so the final result of that brood was 65 imagines, all of the plain form. This ended that experiment. However, on the 5th July 1938 a banded female was taken at Wimbledon which had evidently already paired with an unknown male and she laid a batch of eggs which were again shared between Dr. Cockayne and myself. From them we bred 43 (20 ♂ and 23 ♀) of the banded form and 12 (5 ♂ and 7 ♀) of the plain form. Two pairings were obtained in June 1939 between bred banded males and females and both pairings resulted in due course in reasonable broods of larvae, though I have no information now as to the actual numbers of ova laid. One brood I called "X" and the other "Y". "X" consisted of 72 larvae of which some 50 survived on 28th April 1940 and "Y" had 70 larvae of which some 48 survived on 28th April 1940. Brood "X" eventually gave 47 imagines (25 ♂ and 22 ♀) *all banded*, and brood "Y" gave 46 imagines (21 ♂ and 25 ♀) *all banded*. Presumably therefore the banded female taken on 5th July 1938 was a heterozygote which had paired with a heterozygous male and the F2

generation (Broods "X" and "Y") were either $DD \times DR$ or $DD \times DD$. These results confirm the assumption that the banded form is dominant, and should have been published long ago but were delayed by the war and then overlooked. I have to thank Dr. Cockayne for reminding me of the matter.

The White and Pale Forms of *Lycaena phlaeas* L.

By P. SIVITER SMITH.

I am afraid that I cannot agree with Mr. Goodson (*Ent. Rec.*, 64: 23) that var. *cuprinus* Peyer., can be regarded as the same as var. *intermedia* Tutt, even in view of the additional words—"brilliant brassy yellow" which have come to light. In the first place, the difference in Tutt's quotation seems to have arisen because he referred to the 2nd Edition of Peyerimhoff's Catalogue. Tutt's extract is correct for that Edition but apparently not for the First Edition, although he gives the reference to the latter, quoting the date 1871 whereas Mr. Goodson quotes it as 1862.

However, Tutt's *intermedia* is described (*Brit. Butt.*, 1896, p. 153) as follows:—"2. Ground colour, brassy = ab. *intermedia* n. ab.," and he was dealing primarily with British specimens. Now the average British specimen that is intermediate between the ordinary red and the cream or white forms is quite an uninteresting one, lacking brilliance on the whole and frequently even lacking "shine". They are indeed intermediate and the name should stand for them.

Nevertheless, there is a much rarer form found that could be described as "brilliant brassy yellow". It is usually referred to as the "golden" form. These are quite different from the ordinary *intermedia* and are much more striking looking insects. (See Tutt, *Brit. Lep.*, 8, p. 359 (top) re these). To these the name *cuprinus* Peyer. should be applied.

A great many changes will be needed in the varieties and also in some of the races of *phlaeas* as there are a lot of errors of one sort or another. There are also a great many names and synonyms, and a "bit by bit" examination of these will lead to a greater confusion. It is probable that in the corrections, quite a number of the existing names (e.g. *cuprinus* above) can be utilised without the need to create more. Thus a wholesale revision is desirable if this can be done. There are at least eight other major varieties of *phlaeas* where correction or modification are needed—some of them being well-known ones—but it is difficult to do this without a full survey with a great deal of material in the way of specimens to judge from. My revision on this species is being carried out with about ten thousand specimens available in my own collection, from almost every part of the world. There is considerable muddle and confusion and it is really better if no additional names can be given until more data is published. For instance, in the pale forms of *phlaeas*, there are no less than nine quite separate forms of "paleness" all of which could be named if this was thought useful. There are also existing names which, when correctly applied (again e.g. *cuprinus*) may cover an appropriate gap. It takes a long time to do this work thoroughly.

The point Mr. Goodson makes about var. *alba* Tutt and var. *schmidtii* Gerh. is interesting. It could also, I suspect, be a matter on which one

could argue. It is possible that Mr. Goodson's conclusion is the correct one, but presumably Tutt could have argued that if Gerhard's figure was of a cream insect (as indeed Tutt specifically says it is) then his description must refer to the cream form.

It will be a great pity, in my opinion, if the name *alba* Tutt has to disappear. I would like to see Tutt's opinion given the benefit of the doubt. For one thing, a number of other names have been created, all linked to *alba*. This natural linkage will disappear if *alba* gives way to *schmidtii*. Similarly there is a linkage with *schmidtii* which will be put "out of tune" by the change. Assuming we change over, the "whites" will be *schmidtii* so we shall get the following group: *schmidtii* Gerh. (all white); *dextroalba* Tutt, *posteroalba* Tutt, *anteroalba* Tutt, *semialba* Strd., *distalba* Kuwayama (various parts white), *alba-caudata* Tutt (as *schmidtii* Gerh. (!) but tailed). At the same time we may have a new name for the cream form, yet when we get that we shall still have Tutt's *schmidtii-caudata* which cannot be upset by the change! Look at the chief ones then, assuming the hypothetical new name as *lacticolor* for the purpose of illustration only:—

White form = *schmidtii* Gerh.

White tailed form = *alba-caudata* Tutt.

Cream form = *lacticolor*.

Cream tailed form = *schmidtii-caudata* Tutt.

Surely confusion of this type should be avoided. In view of Tutt's statement that Gerhard's figure was cream (and perhaps it was), is it reasonable to add further upheavals to a species that already is confused and difficult? I believe we should strain at the gnat of Tutt's view, as I object to swallowing the camel of confusion as instanced by the inset panel above.

In addition, there are other names for "yellow" and "white" specimens of *phlaeas* that have been given in America. These have been applied, of course, to specimens that are of the American subspecies *hypophlaeas*. In view of the fact that they have been so applied to a subspecies, how do they fit into the picture? Can they be treated as being equivalent to a varietal name given to *L. phlaeas* of Europe? There is *fulliolus* Hulst (1886) for instance, applied to yellowish forms. Would it be correct to use this name for some of our specimens here, instead of making new ones? Another one is *newi* Rummel and there are others. Must they be used solely for specimens of ssp. *hypophlaeas* or can they be fitted in to the pattern of our requirements? All this should be done in one complete effort if possible, to avoid further names being created, that are not needed or which do not harmonise with those existing.

If Mr. Goodson's view is correct, and the pale straw or pale yellow examples are without a name, will that gap not have been already filled by Leeds, who has given the names *antilacticolor*, *lacticolor* for these forms? It is one of the confusions that exist that Leeds' Catalogue of Names is not fully acceptable as a whole, yet it seems to me that where he has given a name to a form not previously named (e.g. *rufomargo*, *inaequalis*) those particular names should stand as valid. Is this correct?

[Gerhard's insect was not cream-coloured. Since *dextroalba*, *posteroalba*, etc., are quite unrelated to *schmidtii* = *alba* Tutt, it is an advan-

tage to have this made clear. The names given by Leeds are valid if he has specified that they occur in *phlaeas* and have priority.—ED.]

Familiar Butterflies in North Africa

By Brigadier C. G. LIPSCOMB.

Towards the end of October last year I found myself posted to North Africa at short notice and the limitations of air transport made it impossible for me to travel with my normal collecting equipment. My observations, which cover in the main the coastal areas of Tripolitania and Cyrenaica, are therefore based on what I have seen but have not been able to verify by capture. A brass hat has its uses but it was not designed for catching butterflies!

My Headquarters during November was in Tripoli where the weather was still warm enough to bathe, but butterflies were remarkable by their almost complete absence as only the odd battered *Vanessa cardui* L. was in evidence. In December I moved to Cyrenaica, first to Tobruk and then to Derna, a hundred miles to the westward, at the foot of the Jebel. However the story was still the same with the exception that in the middle of the month when I paid a hurried visit to Malta I saw a single fresh *Colias croceus* flying over a flower bed in the centre of the town.

The New Year started well with a very big emergence of *V. cardui* on January 1st. Their numbers increased throughout the month and I was able to confirm that they were equally abundant over the whole area. I have seldom before seen a butterfly in such profusion and in this case my observations covered a thousand miles of coast line. It will be interesting to see, later on, whether these butterflies are the forerunners of a big emigration movement to Europe or the British Isles. Thistles of various kinds appear after the winter rains throughout the area under observation and no doubt form the foodplant of the larvae, although I have not so far succeeded in verifying this.

In the third week in January I was again in the Tripoli area and on the 23rd, while visiting the very fine Roman city of Leptis Magna, I saw several specimens of both *C. croceus* and *V. atalanta* flying about the ruins in company with numbers of *V. cardui*. *C. croceus* wasn't seen again till a month later when I saw a single ♀ flying in the Wadi Derna and a few days later I noted several fresh *V. atalanta* on the wing in the vicinity of my Mess.

On February 5th the first *Pontia daplidice* appeared in my garden and I was able to identify it when it eventually settled on a flower-head. By the middle of the month they were flying locally in some numbers and seemed to favour localities where a certain aromatic shrub grew, and where this occurs one can count on seeing *P. daplidice* on the wing.

I think this butterfly probably flies in very reduced numbers throughout the winter as I have seen single white butterflies at odd intervals from December onwards but have not been able to identify them for certain.

On February 26th I saw the first *Papilio machaon* at Derna flying swiftly over rocks and shrubs near the seashore—others have appeared since but it seems local and is so far restricted to one locality a mile or so east of the town. It is difficult to determine what can be its foodplant in this arid land, but I noted a ♀ fluttering over a patch of Camel Thorn

although subsequent examination failed to locate any eggs. The *machaon*, as far as I can tell, are of the normal European form and it has proved a pleasant surprise to see them on the wing in this unlikely spot.

On March 3rd I saw my first *Pieris rapae*, a ♀, sunning itself on a leaf in my garden in Derna. It proved similar in every way to our normal Spring form.

From the foregoing brief notes it will be realised that this part of Africa is hardly an entomologist's paradise; but the appearance of these familiar faces has done much to add interest to one's journeys and walks.

The Collecting of Aberrations

We have received the following Note from a correspondent:—"In a copy of *The Lepidopterist's Register* published in 1868 by J. T. Carrington (at one time editor of *The Entomologist*) I found a hand written reference to the collection of S. J. Capper of Liverpool in which the following occurs:—'The late Alfred Owen of Liverpool was Mr. Capper's most intimate friend and died in 1874. Mr. Owen was one of the first who made the collecting of varieties a speciality. At that time few entomologists valued these as much as the type: this gave him the opportunity of making a very grand collection . . . he possessed a wonderfully keen eye for aberrations, which placed him in the fortunate position of having a collection of varieties that was celebrated throughout the country.'

"This statement claiming that Owen was the first, or one of the first, to collect aberrations (or 'varieties' as they were called in those days) is interesting. In my copy of Mosley's *Illustrations of British Lepidoptera*, which dates from 1878, there are hundreds of figures of aberrations, of both butterflies and moths, which are fully as extreme as anything bred or caught nowadays. Many of the specimens figured were from old collections—Bond, Samuel Stevens and others—which were taken in the 'sixties. One specimen of a ♀ *Argynnis paphia*, with very large black blotches on the forewings, taken in 1804, is figured as from Sam Stevens's collection. It was in perfectly good condition and originally belonged to Donovan (1768-1837).

"From the data given by Mosley it seems that the collecting of aberrations dates from a long time prior to 1860 and the names of many collectors are mentioned in the book as well as Owen's. Edward Newman's *Illustrated Natural History of British Butterflies*, first published in 1871, figures many 'varieties'. In quite recent years I have heard collectors say that they discarded aberrations as being unfit for the cabinet; but I am afraid these statements must be taken '*cum grano*'. I do know that in the early 'nineties the New Forest was alive with collectors on the look-out for aberrations and I went there on the same quest myself, but fruitlessly. I saw a melanic specimen of *Argynnis cydippe* caught by Ashmead, a dealer who had a shop in Bishopsgate Street, London. In a previous season the late A. B. Farn acquired an almost completely black ♀ *Argynnis paphia*, which was brought to him by a small boy, a woodcutter's son who, Farn told me, was more than satisfied with a gift of sixpence. This episode is noted on the label

pinned beneath the insect. At the sale of Farn's collection in 1922 this specimen was bought for £12."

Edward Newman certainly fostered, if he did not originate, the collecting of aberrations. In the advertisement on the cover of No. 89 of *The Entomologist* (April 1871) announcing his above-mentioned book appear the words "With Life-size Figures of each species and of the more striking Varieties", and in the following January (No. 99) he began to illustrate, in his magazine, new 'varieties' of butterflies as they were brought to his notice. Several aberrations are depicted by Humphreys and Westwood in their beautifully illustrated book *British Butterflies and their Transformations*, 1841; for example, on Plate 8, *Melitaea athalia*, described in the text as "*Melitaea Pyronia* (a variety of *M. Athalia*)": this specimen was "taken by Mr. Howard at Peckham in June 1803". Plate 9 has "A dark variety of *M. Euphrosyne*"; Plate 13 an extreme aberration of *Aglaia urticae*; Plate 17 an aberration of *Melanargia galathea*. Duncan's *Natural History of British Butterflies*, 1835, depicts an aberration of *Melitaea aurinia* (Plate 14, fig. 2)—which he mistook for *M. cinxia*—and two other aberrations of *aurinia* were figured by J. C. Dale in Loudon's *Magazine of Natural History* in 1834. But none of these aberrations was named (except when, as in Humphreys and Westwood's book, they were considered by some entomologists to be specifically distinct). It seems clear that although extreme aberrations were sometimes kept and pinned in cabinets long before 1860 as our correspondent suggests, they were regarded merely as curiosities, and no value, scientific or otherwise, was attached to them.

The New Forest in the 'Nineties and After

By S. G. CASTLE RUSSELL.

The times of good Queen Victoria may have seemed humdrum to some people but not so to the entomologist, for they were very favourable to insect life, and probably the most popular locality and the one most frequented by collectors was the New Forest. In those days and up to the advent of the World War in 1939 the Forest was far more wild and primitive than it has been since. I think I am right in stating that the total number of keepers did not exceed 17, with about three times that number of woodmen to cover the whole area of some 60 enclosures apart from the woods. These enclosures varied from a hundred to a thousand acres in extent; most of the better known ones averaged 500 acres. Oakley was one of the extra large ones, comprising some 1,000 acres and extending to about 2 miles in length. Consequently it was only possible to trim the rides at long intervals, and the bramble bushes on which the many species of butterflies fed became very luxurious in growth and size. There were numerous rides in the enclosures all lined with bramble, each side getting its full share of sunshine in the morning, afternoon and evening. At the cross rides on which the sun shone from sunrise till sunset the bramble blossoms were crowded with insects of all kinds.

My first visit to the Forest was in July 1892 and this happened to be one of the seasons of phenomenal abundance which used to occur in the Forest from time to time. I entered by the gate leading from Holland wood into the ride in Ramnor Enclosure just as the sun became for a

time obscured. As I walked slowly along, butterflies alarmed by my approach arose in immense numbers to take refuge in the trees above. They were so thick that I could hardly see ahead and indeed resembled a fall of brown leaves. As soon as the sun came out again they descended from the trees and resumed feeding on the bramble blossoms. The day was very hot, sunny and a little hazy, and the butterflies were unusually tame and open for examination. The predominating species was *Argynnis paphia*, closely followed by *Aphantopus hyperantus*, *Limenitis camilla* and *Maniola jurtina*. In one particular ride I found *A. cydippe* and *A. aglaia* almost as numerous as the other species, which was unusual as these two species prefer more open areas such as felled copses, etc.

I covered most of the rides in Ramnor Enclosure, during which I met with two small colonies of *Nymphalis polychloros* and a ♀ *A. iris* drinking on the damp ground near a stream. I have no note of having seen other *iris*, but I was not particularly looking for them. They were by no means uncommon in those days. I then investigated the rides in the adjoining enclosures of Parkhill and Pignal, and there I found the same abundance of butterflies. I now decided to return to the cross rides in Ramnor where I had had my lunch and where, under a culvert, I had hidden my tea basket. Unluckily I failed to find the particular cross ride and got completely lost, and only by good luck found myself at the edge of the Forest near Balmer Lawn and in time to catch the 6.30 train. The remains of my tea are possibly still there to-day. Many collectors have lost their way in the Forest as all the cross rides are exactly alike. After this experience I used to blaze my trail. It was quite hopeless to expect to meet anyone to ask for guidance. During the whole day, although on the qui vive, I did not meet with an aberration of any kind and the only out of the way insects I took were five specimens of ab. *valezina*, which in those times was considered a good bag. It was in later years that this form became so common and in certain enclosures outnumbered the typical ♀ ♀.

I did not visit the Forest in 1893, which was a remarkable year for the very early dates of emergence of butterflies, some being nearly a month ahead of their normal time of appearance. *L. camilla* was fully out in early June and most of the other species were worn by July. This was due to the fact that the year was an exceptionally fine one—in fact from early March to August there was not a cloud to be seen in the sky. It was preceded by one of the most severe winters on record when large blocks of ice were to be seen drifting under London Bridge. In this season considerable numbers of *A. paphia* were marked with white stripes or spots on the upper wings, but no other variation was recorded.

After that, owing to the fact that I was living at Woking, I made periodical visits to the Forest. The railway company issued a day ticket which was available by the 6.30 a.m. train from Woking, arriving at Brockenhurst at 8.30, which enabled one to be in the Forest soon after nine o'clock. One could return on any train after 5 o'clock and there was a convenient fast one at 6.30. In the morning there was a connecting train to Holmsley on the Lymington line, and I frequently went to Holmsley and Wilverley enclosures as a change from Brockenhurst. Very often one area was far more prolific in numbers than the other.

In those days it was not only the Lepidoptera that were abundant. A fly resembling the common house fly was in clouds and followed one in a dense stream. Immediately you stopped or sat down to pin a specimen they settled on you in a mass, and it was quite impossible to do anything unless you had a pipe in your mouth or had previously deluged yourself with citronella or other oil, which however only lasts a few seconds. There was another species, the ♂♂ red and the ♀♀ green (or vice versa), which bit viciously like the clegs, several of which were usually to be found on your hands. The only effective way of dealing with these pests was to cover one's hands and neck and ears with the rank nicotine juice obtained from an uncleaned pipe. There was also a very large horse fly, probably a *Tabanus* species. A collector named Burton, on hearing it booming round him for the first time, exclaimed "Why, here's a blooming brass band!", by which name it afterwards became known among us. In some of the enclosures, but not in all, there was sometimes a plague of midges and one could deal with them only by continuous cigarette smoking or using a chiffon veil. Otherwise they crowded into your eyes and ears and mouth. During one season a small colony of nudists arrived to stay in the Forest for a week or so. It happened that the flies were particularly bad at that time, especially the biting kinds, and they thoroughly enjoyed the visit of the nudists. The colony departed next day, which made me feel quite grateful to the Diptera.

On a visit in May 1900 I found *Celastrina argiolus* flying around the holly trees in the Holmsley district in immense numbers. A similar abundance occurred in August 1922 in an enclosure in the northern area. This enclosure was surrounded by common land with a large number of holly trees and was a favourite spot for this species. All the rides in the enclosure were full of them—a most unusual experience for me.

The year 1904 was a very poor one—so often the result of a fine and dry summer previously. But 1905 was another remarkably fine and hot summer during which a record for summer sunshine was reached. It was preceded by an exceptionally hard and severe winter during which, as in 1892, immense slabs of ice could be seen passing to and fro under London Bridge. In the Forest, butterflies became abundant again, but not much variation was noticed; in the following season, 1906, however, large numbers of aberrations of many species were recorded, specially of *L. camilla* and among the Argynnidae. In the subsequent years until 1918 I did not meet with anything remarkable in the way of variation, though usually each season produced insects in plenty.

About this time the Forest was attracting considerable numbers of collectors and there were two resident professionals, Tate and Morris, who would undertake to act as guides to entomologists unacquainted with the locality. There were also the well-known and efficient Gulliver brothers, all of whom were keepers and lived in the midst of the Forest, as well as another keeper whose name I have forgotten. Charles and George Gulliver were keen hunters and netted many very fine and extreme aberrations of all species, especially of the large and small fritillaries and *L. camilla*. They had of course exceptional opportunities. Every collection of note at that time, and in fact at the present day,

contains fine examples of aberrations bearing the name of one or other of the brothers on the label. George was especially fortunate, and he continued to collect long after he had retired from the Crown service. Whenever I paid him a visit he invariably had a good stock of *A. iris* larvae which he would sell at 1s. each and large numbers of other lepidopterous larvae. Either of the brothers would always take you out to look for *iris* larvae, with successful results.

The great majority of the collectors who visited the Forest were interested chiefly in the Heterocera, of which the Forest contained a very comprehensive fauna. The two *Catocala*, *sponsa* and *promissa*, were always in great request, and there were numerous species that were difficult to obtain or did not occur elsewhere. There were favourite rides for sugaring, notably in Wilverley and Burley, and insects were usually to be found in plenty at night on the sugar patches, sometimes in great abundance. The collectors used to sugar a ride and then attach a visiting-card to a tree in it, hoping that the 'beat' would be regarded as private property. After a time objections were made by certain individuals who considered the treacle patches unsightly. As a result, although the Forest Authorities did not actually prohibit sugaring (possibly they had not the power to do so as the public then had certain rights in the Forest), they instructed the keepers to cover the freshly put on sugar with earth. I do not think, however, that this practice was continued for very long.

In the daytime many hours could be spent examining the tree trunks for moths, which were many and varied. *Boarmia roboraria* and *Lymantria monacha* could always be found in numbers, and Geometers were plentiful. *Zygaena meliloti*, the New Forest burnet, occurred along the railway bank at Wood Fidley and was persecuted by collectors and dealers for years, when not unnaturally it became extinct. No other spot was known for it.

In 1917 there was a season of abundance without notable variation; but 1918 was a year of phenomenal abundance of all species and produced large numbers of aberrations. The insects were in amazing quantities not only in all the enclosures but in open places wherever bramble blossom occurred, some miles outside the Forest boundaries. I spent most of that July in the North, but on my return towards the end of the month I paid several visits to the Forest and caught several nice aberrations of *A. paphia*. Many extreme forms were taken by collectors, and the late Sir Vauncey Harpur Crewe (who was staying in the Forest together with his assistants) caught, and later exhibited at the Entomological Society, over 50 extreme aberrations of *paphia* and many melanic forms of *L. camilla*.

In 1919 this phenomenal abundance occurred again and I spent the whole month of July in the Forest. The numbers of butterflies were so great that the large bramble bushes would each have from 30 to 50 feeding on them at a time during the favourable hours, namely, during the late afternoon and in the evening up to 7.30 p.m. (not summer time). I usually arrived in the Forest rides at about nine o'clock, and if the sun was in evidence all the *paphia* would be seen sitting on the ferns warming themselves; but they were wary and easily alarmed. Within an hour all were on the wing, flying about rapidly, the ♂♂ hunting for ♀♀, and some of both sexes feeding. At about midday large numbers of pairs

in copulation were to be seen flying slowly together from bushes to trees, the ♀♀ carrying the ♂♂. This midday pairing occurred regularly every day until about the 24th of the month, by which time the bulk of the emergence was over. Every day I caught some pairs and marked the ♀♀, which later on and during the mating period I found again paired. This indicates that the ♀ copulates more than once, but whether this results in additional eggs can be only surmised.

From one o'clock until about 4.30 the *paphia* were mostly in the interior of the woods, when they began to come out into the open rides and commence the feeding which lasted until late in the evening. I used to take advantage of this lull to visit the open spaces where *A. cydippe* and *A. aglaia* were to be found. Both these species produced aberrations but not so extreme nor in such numbers as occurred amongst the *paphia*. Strange to say the area in which I was working, which consisted of three large enclosures, produced only one melanic specimen of *L. camilla* during the whole month although numbers were taken in the Brockenhurst area. (In later years these enclosures were more prolific as regards the numbers of melanic *camilla*). By 5 o'clock the *paphia* began to be abundant, feeding on the bramble blossoms on the sunny side of the ride, and when the sun gradually passed over to the other side of the ride the butterflies followed it. One could traverse miles of rides lined with large bramble bushes each covered with butterflies in unbelievable numbers. During these seasons which were so productive of aberrations of the July species the smaller fritillaries *A. euphrosyne* and *A. selene* also provided considerable numbers of aberrational forms.

On several occasions during my visits to the Forest the *paphia* behaved in a most unusual manner. Instead of frequenting the bramble blossoms during the day and evening, even whilst the sun was shining in full, they remained on the tree tops, where they could be seen flying about. I can only account for this by surmising that the honeydew on the oak leaves was more attractive than the honey in the blossoms. Fortunately, however, it was a very rare occurrence.

To return to 1919, I saw no sign of *A. iris*; but I was not interested in looking for it. Nearly all the days were fine and usually sunny and I netted a considerable number of extreme confluent and melanic *paphia*, all very luckily in good condition. My best prize was a fine almost entirely black example of *A. paphia* ab. *valezina*, which I met coming down the ride, freshly emerged. I missed it and it made off inside the wood, and as I put my foot on the farther side of the usual ditch I escaped treading on it by only an inch or so. It got up and flew out into the ride and up into a lofty oak tree. The day then turned very dull, and after sitting under the tree for half an hour hoping that the sun would come out again, which it did not, I decided to move on. I thought, however, that I would pay a final visit to a very large bramble bush situated at a cross ride which I had inspected just before I had seen my 'var.' To my delight, there was my black *valezina* quietly feeding upon it! This time I did not miss.

In 1920 I again spent a holiday in the Forest; but it turned out to be a very poor year, with continual rain, and butterflies were conspicuous by their absence. I met with no variation in the area I was staying in, but round about the Lyndhurst Road area many melanic aberrations of *L. camilla* were taken.

In 1922 there was a considerable improvement in the numbers of all species in the Forest, and in certain areas *A. paphia* could be found swarming in a few favoured rides but not generally distributed. However, there was little or nothing in the way of variation among the fritillaries though there were more than the usual number of *A. hyperantus* var. *lanceolata*, and some fine examples of these were met with. During the next season, 1923, *paphia* was again prominent in large numbers and in this particular area a few extreme melanic aberrations were netted; but so far as my information went unusual forms were not met with in the Forest generally.

From this date there were no periods of special abundance until 1940, when there occurred a season of great abundance—not, however, marked by any variation—in a limited number of the northern and central enclosures. In the following year, 1941, aberrations of all kinds occurred amongst the *paphia*, but not amongst the large number of *A. cydippe*. Melanic forms of *L. camilla* were frequent, but *A. hyperantus* was not producing var. *lanceolata*. So far as aberrations of *paphia* are concerned this season must have been the most prolific ever recorded and the number of aberrations taken in the limited number of enclosures affected was considerable. It was not a season of phenomenal abundance similar to the 1918-1919 period, as then the abundance occurred over the whole Forest area and in all the enclosures. In 1942 the plenitude was less but the species continued to produce numbers of aberrations although far less than in the previous year. In 1943 the populations of all species were enormously reduced; one could walk for several miles through enclosures which had teemed with butterflies the previous season and meet with not more than a few dozen of each kind. This extreme scarcity has continued until the present day and it is the longest interval between abundance and scarcity that I have ever recorded.

It should be noted here that the above remarks are gleaned from my entomological diary aided by my memory, and other collectors may have had quite different experiences as regards numbers and variation in areas which I did not visit.

The scarcity now prevailing may be partly due to the devastation caused by the War and the operations of the Forestry Commission; but there must be other causes as well; for although there are still parts of the Forest which have not been interfered with and are in the same condition as they were in before the War, when they swarmed with insects, they are now as bare of butterflies as the rest of the Forest.

It is doubtful if the Forest will ever resume its old aspect of wild and primitive conditions. Large areas have been cleared and planted with conifers. As they grow up these plantations darken the area and no plants will grow within them; in time the Forest will be of the same type as the Black Forest in Germany which, from all I hear, is not a good collecting ground for the butterfly hunter. It is a great pity that this once noble forest has been lost to the public. On more than one occasion the Military Authorities endeavoured to obtain the use of it for training operations; happily such an outcry was made that they were forced to abandon the idea. Owing, however, to the War the Forest has now been to all intents and purposes "nationalised" and entirely altered in character.

It is interesting to note that the periods in which large numbers of insects and aberrations occurred have had long intervals between and have lasted for two seasons, the third year being one of phenomenal scarcity. Between 1896-7 and 1918-19 was an interval of 21 years, and between 1918-19 and 1941 one of 22 years. Thus it would appear that there is an interval of some twenty years between these seasons of extreme abundance and large numbers of aberrations, the variation ending in the third year, and then very small numbers with complete absence of aberrations.

Usually aberrations of *A. paphia* are very rare in the Forest in 'ordinary' years. I knew a collector who lived at Brockenhurst for some 20 years without capturing a single example and another usually very successful entomologist who netted only one during 15 annual visits to the Forest. However, both these collectors caught many fine aberrations in 1941 and 1942.

Notes on Microlepidoptera

By H. C. HUGGINS.

Oidaematophorus tephraedactylus Treits. The larva of this 'plume' may be found feeding on the large bottom leaves of the golden-rod in many woods, before the flower-stem begins to rise. It is pale green in colour with numerous whitish hairs and feeds up very quickly, almost skeletonising the leaves. It can usually be reared with little difficulty.

The cases of *Pachythelia villosella* Ochs. should be looked for in its restricted localities (Hampshire and Dorset) in the first week in May. The early date is necessary as the male cases are nearly always fixed on the heather twigs, and are quickly covered by the new shoots and are then difficult to find. The larger cases containing the pupae of the wingless female, a fat white legless mouthless bag of eggs, are usually fixed much higher up and can be found on fences, tree trunks, etc., at a height of two or three feet right into June. In mid-June 1935 I found over fifty high cases in the New Forest and of these only two were males, which can easily be distinguished by their smaller size and the silken bag at the lower end through which the moth emerges (the females do not leave the case although they push half-way out when 'calling').

Villosella is rather difficult to rear when collected in May; the male pupae are apt to get too dry and although they push their way out of the bag and hang from it by their posterior hooks they fail to break the pupal shell in many cases. The very few I have found in mid-June have always emerged without difficulty in a few days.

The female is best preserved "blown" like a larva. Mr. R. L. E. Ford kindly blew females of this insect and *opacella* for me, and they are much more lifelike than the miserable dried mummies I previously possessed.

The cases of *Pachythelia opacella* H.-S. may be found in similar places to those of *villosella*, preferably about a foot from the ground and in the grassier parts of the heaths they both inhabit. I have never succeeded in finding the case of the male of *opacella*. One year I collected over a dozen cases on posts and fir-trees, but although some were only

a few inches from the ground all were females. I fancy the male case must be affixed to grass-stems near the root in the South of England. In Scotland it has been found attached to stones. *Opacella*, though a much scarcer insect, has a very wide distribution in this country, unlike *villosella*, which is confined to the extreme south.

The larva of *Evetria purdeyi* Durr. may be found in May feeding on the flowers of Austrian pine and Scots fir, and reared without difficulty. It is almost certainly this larva which is referred to on page 40 of Tutt's *Practical Hints*, Vol. I, where it is mentioned as feeding with *Sericoris bifasciana* on flowers of Scots fir. I found these two species feeding together on Scots fir at Hartlip in Kent, and on Austrian pine at St. Margaret's Bay.

Tutt gives the correct habitat of *sylvestrana*, shoots of stone pine, on pp. 13 and 20 of the same volume.

Notes and Observations

LARVAL COLORATION OF DEILEPHILA ELPENOR.—In view of the theories of Mr. D. G. Sevastopulo (*Ent. Rec.*, **63**: 211; **64**: 41) on the larval coloration of the Sphingidae the following observations may be of interest. If this problem of variation is to be solved it will be done only by very carefully rearing and counting large numbers of whole broods of caterpillars under varying conditions, and with the requisite controls, and then carefully analysing the evidence obtained. It is obviously the work of many hands, and heads, in close co-operation. The results of one experiment, such as I give here, do not signify much until they are fitted in with other results to complete the picture (I assume that there is a picture to be completed). One piece of apparatus which is required, but which is difficult to obtain, is a standard colour chart. It seems to be a necessity for accurate measurement of variation of imagines as well as of larvae.

In 1951 I reared a batch of *Deilephila elpenor* larvae, and attempted to tabulate their colour changes. I obtained 122 eggs from one female, reared from a larva found in 1950. They were laid between 11th and 15th July, respective daily totals being 6, 12, 69, 26, 9. All the eggs were fertile. The first two hatched on 20th July, the last on 3rd August. On this date I had 122 green larvae of various sizes, but several died later. It is possible that those which died were the ones which would have been green in the final instar. I reared 104 to the final stage and all were of a brownish colour—not the same colour by any means but one shade or another of a range of browns between burnt sienna and raw umber. In the absence of a standard colour chart it is difficult to measure and record these subtle variations. In the earlier stages I distinguish between pale green and dark green, but the former seemed to be only a temporary phase immediately following the moult.

The larvae were fed in airy cages measuring 18" × 12" × 12", about 20 to each cage, under natural conditions of temperature, pressure and humidity. Virus disease killed 5 full grown larvae; the other casualties were drowned or refused to eat in the first week.

The ratio of green to brown *elpenor* larvae in the wild state is very small. In 1950 I collected 35 *elpenor* larvae altogether and of these only

one was green. In 1951 I collected 242, of which only 6 were green. A fine bright green one was found on the same stem as an equally large brown one. I saw the brown one first and I almost missed the green one although it was a sunny afternoon and I was looking for green ones! It may be that I find the brown ones more easily than the green; so I will not attempt to draw any conclusions.—J. H. JOHNSON, 53 Knighton Street, Hephthorne Lane, Chesterfield. 20.ii.52.

	1, 2 or 3	4th Instar			5th Instar		% Green
	Green	Pale G.	Dark G.	Brown	Green	Brown	
Aug. 3rd.	122						100
Aug. 5th.	107			6			94
Aug. 8th.	18	56	3	32			71
Aug. 12th.	2	0	43	32	1*	31	42
Aug. 15th.	1	0	5	19	2*	77	7
Aug. 23rd.						104	0

Table showing numbers of brown and green forms of *elpenor* larvae at different dates and stages of growth.

*For the first few hours after ecdysis many larvae remain green but gradually assume some shade of brown.

CAPTURE OF *PLUSIA NI* HÜB. IN MARCH.—On 20th March I took a specimen of *Plusia ni* Hüb. in the porch of my house and, later, one in my moth-trap. Both were ♀♀ and between them they have laid more than 150 eggs. They were in perfect condition on arrival, but egg-laying has occasioned considerable damage to their fringes. They are very pale compared with the two specimens I have in my collection dated 22nd August 1945 and 9th October 1947, both taken here in Maidencombe.—FRANK H. LEES, The Gables, Maidencombe, Torquay, Devon. 24.iii.52.

[We hear that during March other specimens of this moth were taken at Hastings, Bexley, and Salisbury.—ED.]

VANESSA CARDUI L. IN MARCH.—On the morning of 3rd March a *V. cardui* flew past me in a northerly direction. On the 10th I again saw this species quite close at hand, and to-day (24th March) I saw a third. All three were flying in the neighbourhood of Christchurch.—F. M. B. CARR, Martin's Close, Mudeford, Christchurch, Hants. 24.iii.52.

EARLY APPEARANCE OF *VANESSA CARDUI* L. IN THE ISLE OF PURBECK.—Going through the burial ground at Godlingstone, one and a half miles from Swanage, on 12th March I saw 20 to 25 *V. cardui* flying over and alighting on the heather blooms. Two pairs were *in cop.*; also I noticed that a few seemed undersized and worn, while others were quite fresh. It was a cloudless day with an easterly wind, the time 2.30. On the 13th I went there again, but it was cloudy and only four specimens were observed. Mr. Dru-Drury, who lives at Corfe Castle, told me that he saw 7 there on March 6th. Imagines of this species were plentiful in this district during last autumn, so perhaps there is a possibility that it survived the mild winter in the pupal stage.—LEONARD TATCHELL, Rockleigh Cottage, Swanage, Dorset. 15.iii.52.

VANESSA CARDUI L. IN DEVON.—On 10th March I saw a specimen of *V. cardui* in my garden. On the following day I saw a second specimen in the next village (Musbury). A third came in to light on 22nd March. Surely these dates are extremely unusual. I believe there is no record of this insect hibernating, or going through the winter as a pupa, in this country; and the spring immigrants do not normally arrive before May or June.—ARTHUR BLISS, Golden Mist, Whitford, near Axminster, S.E. Devon. 28.iii.52.

HADENA ANDALUSICA STAUD. (BARRETTII DOUBL.).—With reference to Mr. Howard's note in *Ent. Rec.*, 64: 87, if he will refer to *Proc. Ent. Soc. Lond.*, October 5, 1919, xlv-xlii, he will find a reference to "Rock spurrey" as the principal foodplant of the above insect. It is also mentioned in the revised edition of *The Moths of the British Isles* by R. South, published in 1939.—H. M. EDELSTEN, Bramble Hill, Balcombe, Sussex. 21.iii.52.

EARLY SPRING MOTHS IN SOUTH HAMPSHIRE.—By 8th March, after a short spell of warm dry weather with day temperatures as high as 60° F., many of the early Spring moths were out. That evening I took my m.v. lamp to a small wood on the outskirts of the New Forest. The first arrival was *Erannis leucophaearia* Schf. within a moment or two of switching on. Other species noted were *Theria rupicaprararia* Schf., *Phigalia pedaria* Fab., *Apocheima hispidaria* Schf., *Alsophila aescularia* Schf., and *Orthosia cruda* Schf., *Achlya flavicornis* L. and *Biston strataria* Hufn. in some numbers, while *Conistra vaccinii* L. was plentiful. I was very surprised to see numbers of the migrant *Nomophila noctuella* Schf. appearing throughout the evening and I took some half a dozen specimens to confirm their identity. All were in perfect condition.

By the 10th of the month *A. flavicornis* was at its peak; *Xylocampa areola* Esp. was noted for the first time this year and a singleton of another migrant *Laphygma exigua* Hüb. was taken. A week later *B. strataria* was particularly abundant and dozens of specimens in fine condition were seen on street lamps, sometimes three, four and even five on one lamp. It does not seem to have been so common here since the War. Other species noted on this date included *Cerastis rubricosa* Schf., *Orthosia stabilis* Schf., *Earophila badiata* Schf. and *Ectropis bistortata* Göze.

On the 19th I worked the m.v. lamp in a pine wood and species not already mentioned included *Orthosia gothica* L. in numbers, *O. munda* Schf. and *Panolis flammea* Schf. Further single specimens of *N. noctuella* and *L. exigua* were taken and a fine specimen of *Plusia ni* Hüb.

A visit to a coastal locality on the 25th March in the hope of seeing something more of the migrant species produced nothing new except four or five specimens of *Selenia bilunaria* Esp.

There followed almost at once the cold spell with much snow and very cold N.E. winds which put a stop to further collecting until the beginning of April when the first *Orthosia miniosa* Schf. were noted.

It will be interesting to see if any of the progeny of the remarkable migration of early March survive the cold spell and make the summer as rewarding as the spring.—A. C. R. REDGRAVE, 14a The Broadway, Portwood, Southampton. 6.iv.52.

EARLY EMERGENCE OF *HARPYIA HERMELINA* GÖZE.—On 13th April, I found a ♂ specimen of the 'Poplar Kitten' at my house in Wellingborough. It was resting on a wall within the influence of the light from my m.v. light trap, which had been on all the night before. In the same situation last year I took ♂♂ on the 8th and 14th July—but 1951 was, of course, generally speaking, a late season all round.—P. J. GENT, 3 Irthlingborough Road, Wellingborough, Northants. 13.iv.52.

CELERIO LINEATA LIVORNICA ESP. IN SUSSEX.—While wandering at dusk in my garden here on 11th April I took a very fresh male *C. lineata livornica* (the Striped Hawk) hovering in front of narcissi. This appears to be a very early date for this migrant.—G. E. L. MANLEY, Whales Farm, West Chiltington, Pulborough, Sussex. 23.iv.52.

CELERIO LINEATA LIVORNICA IN YORKSHIRE.—At a meeting of the Yorkshire Naturalists' Union Ent. Section on March 27th, 1952, Mr. C. A. Cheetham, F.R.E.S., exhibited an imago of the Striped Hawk-moth which had been taken alive at Mewith, Bentham, north-west Yorkshire, on March 19th. The specimen is in perfect condition, which proves either (a) that it was newly-emerged and had never flown, or (b) that it had flown over from the continent, these alternatives according to which school of thought you prefer to follow. Mr. Cheetham had thoroughly investigated the occurrence, thinking that perhaps the pupa had come over with some cattle-fodder, but could find no explanation. The appearance is at least two months earlier than one might expect.—F. HEWSON, Rec. Sec., Bradford Naturalists' Society, 23 Thornhill Drive, Shipley.

TRIPHAENA PRONUBA L. IN MARCH.—It might be worth recording for those interested in early dates the fact that I took a perfect *Triphaena pronuba* L. in my M.V. trap at Arkley, Herts, during the evening of the 19th March.

The sudden and unexpectedly early arrival of migrants in the southern half of England during the early part of this month makes me wonder if this specimen could possibly have been a migrant as it is sometimes. To offset this conjecture no other migrants have been seen in this neighbourhood and this species was exceedingly common in the trap last summer.

Another possible explanation may be that a young larva, having found a warm corner in a greenhouse somewhere nearby, pupated in the late winter and the resulting imago was tempted to emerge during the recent warm weather. It would be interesting to hear if any other reader has an equally early record.—T. G. HOWARTH, Brit. Mus. (Nat. Hist.).

THE SUPPOSED 'THIRD BROOD' OF *LYCAENA PHLAEAS* LINN.—Continuously, every year since 1920, I have bred large numbers of this species from ova laid by wild ♀♀ taken in late May and June. In 1926, stimulated by an article by Dr. H. B. Williams in one of the journals, I turned my attention to the possibility of rearing in confinement the third brood said to occur by certain authors, but I never succeeded until two seasons ago.

Now, these late broods which occasionally appear in the wild in great numbers in September and October have almost invariably appeared after very hot and sunny summers such as 1911 and 1921. In both these years dense numbers appeared not only in the country but in the London suburbs. In 1911 the flowers on the platforms of the railway station at Strawberry Hill, Twickenham, were covered with the butterflies and I used to arrive at the station on my way to the City a quarter of an hour earlier than I need have done, to examine them.

In this district (Cranleigh) after the fine summer in 1947 an abundant brood was on the wing in August and September and October. In 1950 the latter part of the summer was very fine and hot and I expected to find a strong emergence of imagines; but such did not eventuate. Very much to my surprise, however, I reared a large brood in confinement, 300 larvae producing 280 odd imagines in September and October. I had never before reared more than 5% of the large numbers of larvae I had, nearly all of them preferring to enter into hibernation, and ultimately to die. Thus my theory expressed in an article I contributed to *The Entomologist's Record* in January 1938 (50: 1) that the so-called third brood was merely a mass feeding up of larvae laid by late June ♀♀ and tempted by the fine and hot weather in June and July to feed up and produce imagines instead of hibernating as usual, was confirmed. In 1941 Mr. Siviter Smith, who specializes on this species, expressed a doubt as to the occurrence of a third brood.

I can give no explanation of this unusual emergence as I bred the insects in the way I have done in former years, in an unheated glass-house, which although above normal temperature does not unduly force the emergence—in fact, I have never found the species respond to forcing, and they eventually die.—S. G. CASTLE RUSSELL, Stokesay, Bridge Road, Cranleigh, Surrey. 25.iii.52.

APATELE RUMICIS L. f. SALICIS CURT. IN KENT.—I took three specimens of this dark form at light in the woods near Ham Street during the last ten days of July 1951. I am not aware that f. *salicis* has previously been recorded from Kent. During the same period at this locality the normal form was fairly common, which in my experience is usually the case at Ham Street with the second generation of this insect.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent.

THE HABITAT OF PARARGE AEGERIA L.—I am collecting data on the types of habitat frequented by this butterfly and would be grateful if lepidopterists would send me details of any colonies they may encounter this season. Notes on butterflies away from the typical habitat (damp shady woods) are very desirable especially if these give topographical details and dates. Full acknowledgment will be made for any material used in a publication on this subject.—D. F. OWEN, Edward Grey Institute, Dept. Zoological Field Studies, Botanic Garden, Oxford. 10.iv.52.

A HINT FOR BREEDING YOUNG LARVAE.—Many losses of young larvae bred from the egg take place because the leaves kept in glass-topped tins become too dry. If the number of larvae is very small and one of the smallest tins is used drying of the leaves takes place very rapidly. A

long time ago I discovered a simple way of avoiding this. If the small tin is placed inside a larger one and fresh leaves or a piece of damp sponge or cotton wool is put into the outer tin, there is no loss of moisture from the inner tin, because the air in the outer tin is as moist as that in the small inner tin, and the leaves remain fresh and soft. The method is particularly useful if one wishes to segregate one or two larvae in order to count the number of changes of skin and the length of each instar.—E. A. COCKAYNE, 8 High Street, Tring.

LATINIZING OF PROPER NAMES.—The inference by the Editor (*Ent. Rec.*, 64: 90) that the termination “-ii” attempts to Latinize the name Gariazzi is not correct (although it would be so in the case of the impossible name Gariazz) since it merely complies with the International Code by adding the termination “-i” to the proper name, irrespective of its spelling. Personal names terminating in “-i” frequently lead to confusion of this kind and it was to introduce some standard of uniformity that the International Congress of Zoology approved, in 1948, that corrections should be made where necessary. Since there is an obvious case for correction here (irrespective of whether or not Borelli mentioned the name of the person in whose honour the species was described) I merely comply with the expressed majority opinion which is to be incorporated into the new edition of the Code. Both the Secretary to the International Commission on Zoological Nomenclature, Mr. Francis Hemming, and our leading Dermapterist, Mr. W. D. Hincks, agree that the correction is in order and should be made. I might add that the opinion of an individual concerning the virtue or otherwise of a rule is not a valid reason for putting it aside.—D. K. McE. KEVAN, University of Nottingham. 25.iii.1952.

[If an author names an insect *aureli* after Aurel Stein, may not someone, thinking of Marcus Aurelius, alter it to *aurelii*? A reviser does not always know what is in the mind of the author and his alteration is not necessarily correct. This is not so serious as the fact that it causes instability in nomenclature. The International Committee says that stability is desirable, but this is mere lip-service, for it frames rules that must create instability.—Ed.]

YELLOW FORMS OF PIERIS NAPI.—In my paper on the nomenclature of these forms which appeared in the March issue (*Ent. Rec.*, 64: 75) two words omitted from line 6 on page 77 may cause misunderstanding. This line should read: “. . . insects with an exceptionally strong inherited pupal delay will not emerge until July or August.”—J. ANTONY THOMPSON.

SUITABLE KILLING AGENTS.—I read with much interest Mr. Siviter Smith's note advocating the use of formalin as a killing agent. I tried this some years ago, and found that an insect killed or treated with formalin became so rigid that it was not possible to relax it in the ordinary water-damped relaxing tin. This is a decided drawback as it so frequently becomes necessary to re-pin or relax a specimen. Possibly Mr. Siviter Smith has a formula for relaxation.

Personally I use a saturated liquid solution of oxalic acid which kills instantly and leaves the insect in perfect setting condition. When deal-

ing with large species such as the hawk-moths, the addition of a small amount of pure nicotine is an advantage, although I have not myself found it necessary. The method I use is somewhat similar to that described by Mr. Siviter Smith and was first demonstrated to me by the late F. W. Frohawk in 1887, and I have used it ever since with unqualified success. It has certain advantages over any other method of killing and after some practice becomes practically automatic and quick.

I have at one time or other tried every known and recommended form of killing insects, and found each one wanting in some way or other.—S. G. CASTLE RUSSELL, Stokesay, Bridge Road, Cranleigh, Surrey. 25.iii.52.

A HAMPSHIRE RECORD OF *CARTEROCEPHALUS PALAEMON* PALLAS.—Appendix IV of *The New Forest* by John R. Wise (London, 1863) comprises a list of the Lepidoptera of the New Forest compiled by Richard Baker of Brockenhurst “who possesses one of the finest collections of Lepidoptera in the district . . . and the whole list has, to ensure the greatest accuracy, been revised by F. Bond, Esq., F.Z.S.” As the Preface of this book is dated “November, 1862,” presumably this list was compiled during that year. It contains *Steropes paniscus*, the former generic and specific names of *Carterocephalus palaemon*.

Can any reader of this magazine enlighten me about this reported occurrence of this insect in the New Forest? It is not included in Fassnidge's *List of the Macro-lepidoptera of Hampshire and the Isle of Wight*, printed as a supplement to this magazine in 1923 and 1924, although that list contains some remarkable entries, such as *Leucodonta bicoloria* Schiff. (the White Prominent) bred from larvae “found on maple” on Hayling Island! Frederick Bond (1810-1889) was one of the most knowledgeable and famous collectors of the nineteenth century and it seems unlikely that he would have acquiesced in such a record unless he had known it to be true. Barrett (*Lep. Br. Is.*, I (1893), p. 303) remarks of this species “Probably, at one time, much more widely distributed” and instances “once from Netley near Southampton, and, by Mr. Moncreaff, at Southwick, Hants.”

Who was “Mr. Moncreaff”? His name does not occur in Stainton's *List of Entomologists* (1860), and this can hardly have been a *lapsus calami* for Sir Thomas Moncrieff (1822-1879), a Perthshire baronet whose entomological activities appear to have been confined to his native county (see obit. in *Entom.*, xii, 232). Southwick is in the south-east of Hampshire, some distance from the New Forest. And whence did Barrett obtain his information about the Netley capture? These “Antient Mysteries” are perplexing indeed!—P. B. M. ALLAN.

A FURTHER NOTE ON *TATHORHYNCUS EXSICCATA* LEDERER.—Most of the books I consulted were old ones so I asked M. Charles Boursin whether anything had been discovered about the larva more recently. He has asked two colleagues in Morocco and Tunisia, where the species is extremely common, and neither knows where the larva lives or what it feeds on. M. Soures in his last work on harmful Lepidoptera does not mention it. M. Rungs of Rabat, who knows the Noctuae of North Africa very well, says he believes the larva feeds on dried substances, but he is not sure. E. P. Wiltshire in the *Lepidoptera of the Kingdom of Egypt*,

1948, p. 249, says "phenology and biology obscure." It is stated that in India it feeds on indigo, *Indigofera tinctoria*, a papilionaceous plant.—E. A. COCKAYNE, 8 High Street, Tring.

GYMNOSCELIS PUMILATA HUB. IN FEBRUARY.—With reference to the Note by Mr. F. W. Byers relating to the above on page 121 of the April number of the *Record*, it may be of interest to mention that I took a specimen of *G. pumilata* on February 7th, 1949, and this is, in fact, referred to in a note in Volume lxi. of the *Record*, page 57. I have, however, never seen this moth in February apart from this one instance mentioned above.—C. S. H. BLATHWAYT, 27 South Road, Weston-super-Mare. 18.iv.52.

SEDINA BUETTNERI HER. AND COLLECTORS.—The Protection Committee of the Royal Entomological Society of London has learnt with considerable regret that in spite of its earnest appeals to Lepidopterists to refrain from collecting any *Sedina buettneri* in the Isle of Wight last year, quite a number of collectors visited the locality, and did, in fact, collect the species. Ordinary commonsense would indicate that the activities of the local District Council in the area must have so jeopardised the existence of this species in the marsh that its population must have sunk already to the danger level. If it is to continue to flourish there the very greatest restraint is necessary on the part of collectors. I am instructed by the Committee to appeal to collectors to leave this insect alone, otherwise some greedy entomologist will certainly be in a position soon to say proudly "I took the last."—N. D. RILEY.

[I do not think the Protection Committee need be afraid that collectors will exterminate *Sedina buettneri*. No one yet knows how to find the larva or pupa and very few females are taken. The great majority of those caught are slightly worn males, which have paired and, as it is probable that one male can fertilize two or three females, their capture is not likely to do any harm. It is a pity the Committee did not succeed in preventing in the first place the draining of the marsh and, later on, the cutting and burning of the reeds and sedge. Dr. Blair by his personal intervention succeeded in preventing part of the breeding ground from being cut and burnt and thereby did more to preserve *buettneri* than all the efforts of the Protection Committee had achieved. If the food-plant is destroyed *buettneri* will disappear. If it remains collectors will not endanger it. I hope the Protection Committee will do its utmost to prevent further damage to the marsh.—ED.].

NOTES FROM EAST ESSEX.—Although East Essex seems to have missed the bulk of the March immigrants, three migrants and a probable migrant, *Agrotis ipsilon* Hufn., have appeared earlier than ever before. The light-trap was operated on some likely nights in February and then nightly from 1st March. Daytime observations have been made whenever possible.

Several specimens of *A. ipsilon* occurred during early March, the first of them on the 3rd. On the 4th, a poor night, there was only one moth in the trap, a fresh female of *Laphygma exigua*. Next day *V. cardui* was seen flying N.E. and settled long enough for positive identification. *A. urticae* was first seen on 11th March; *P. c-album* on 17th; five *N. io*

on 21st; a female *G. rhamni* on 11th April; *P. rapae* on 14th, and *C. argiolus* on the 16th. A further migrant, *N. noctuella*, a worn male, was taken at light on 15th April.

Numbers of moths at light have been small until 13th-16th April, when the night's catch was 150 or more. The most abundant species have been *C. rubricosa*, *O. gothica* and *O. cruda*. Other species recorded to 16th April with date of first appearance, are as follows:—*E. lanestris* 22.iii.; *S. revayana* 13.iv.; *C. mendica* 14.iv.; *P. meticulosa* 11.iv.; *C. rubricosa* 13.iii.; *O. gothica* 8.iii.; *O. miniosa* 15.iv.; *O. cruda* 20.iii.; *O. stabilis* 25.iii.; *O. incerta* 21.iii.; *O. gracilis* 13.iv.; *C. vaccinii* 4.iii.; *E. transversa* 9.iii.; *G. ornitopus* 5.iv.; *X. areola* 23.iii.; *S. libatrix* 15.iv.; *A. aescularia* 14.ii.; *E. badiata* 8.iv.; *T. rupicaprararia* 14.ii.; *E. marginaria* 15.ii.; *E. leucophaearia* 14.ii.; *S. bilunaria* 10.iv.; *C. pedaria* 1.iii.; *A. hispidaria* 16.iii.; *L. hirtaria* 14.iv.; and *B. strataria* 10.iii.—A. J. DEWICK, Curry Farm, Bradwell-on-Sea, Essex. 16.iv.52.

DIPTERA

Volucella zonaria Poda in N.W. Kent.—In order to help in forming as complete a picture as possible of the spread and increase of this species in S.E. England, I feel it worth while placing my own notes on record. They are as follows:—

- 9.vii.1950. 1 ♀ visiting *Umbelliferae* flowers at Stone Marshes, near Dartford.
- Aug. 1950. 1 ♀ in my garden at Charlton.
- 8.x.1950. 1 which flew on to the end of a pier in the Thames Estuary near St. Mary's Bay has already been reported (*Entom.*, 84: 161).
- 18.viii.1951. 1 ♂ in Greenwich Park.
- 19.viii.1951. 1 ♀ on *Buddleia* flowers in a built-up area at Lewisham. Mr. D. F. Owen subsequently took 3 more females at this same *Buddleia* on 23.viii.51. From then onwards he recorded *zonaria* daily, sometimes as many as a dozen, at this bush and on vine leaves until the end of August. During the latter part of the same month he noted a few more on *Buddleia* elsewhere in Lewisham and at Blackheath, but the exact dates were not recorded.
- 4.ix.1951. 1 ♀ settled on a rose-leaf in my garden at Charlton.—J. F. BURTON, 43 Eversley Road, London, S.E.7. 17.iv.52.

COLEOPTERA

Some Notes on *Prionus coriarius* Linn.

By H. SYMES, M.A.

This fine insect seems to have been strangely neglected: indeed, as far as I am aware, it has not even been given an English name. Yet it is the largest and much the most substantial of our native Longicorns and, to my mind, it bears little resemblance to other members of that family, which are mainly long, slender beetles. In the female, at any rate, its antennae are not conspicuous for their length. Its uniform chestnut-brown colour, and the shiny, polished surface of the thorax and

elytra, give it a very neat and attractive appearance. In size it is surpassed only by the famous Stag Beetle, *Lucanus cervus*, among British land Coleoptera, and it may be longer even than some individuals of that species. I have a female that measures 43 mm. in length, as compared with a very small male *L. cervus* that is only 33 mm. long (excluding the mandibles) and a female 36 mm. in length. Other *P. coriarius* ♀♀ measure 39.5, 38 and 37 mm. respectively, but the head and thorax of this species are not nearly as stout as those of *L. cervus*.

I first met *P. coriarius* when I was a schoolboy, living in West Kent, and I was naturally impressed by its size. But I had some difficulty in identifying it. It was not mentioned in popular works dealing with insects, such as Rev. J. G. Wood's *Common Objects of the Country*, Rev. W. Houghton's *Sketches of British Insects*, and E. F. Staveley's *British Insects*. Even to-day, it has not found a place in Dr. A. D. Imms' delightful volume in the New Naturalist series. Eventually I ran it to earth with the aid of Hofmann-Kirby's *Young Beetle Collector's Handbook*, but the illustration given there does not do justice to the size of the insect, and its colour is described as 'pitch-black'.

My first specimen was found in the dog kennel. The lawful inhabitant, Jack, pugnacious Irish terrier, had presumably killed it with his paw, without doing it much damage (I have it still). Though Jack feared neither dog nor man, he was probably scared stiff. He always accompanied my father and me on our entomological expeditions, and I well remember the suspicious look with which he regarded any crawling beetle.

My next specimen was brought in by the milkman, but not in the milk (this was before the days of sealed bottles). Then I found one myself, crawling round the base of an old beech tree in our garden. Two more came my way, and at last, several years later, when investigating the rotten stump of a fallen birch tree in our garden, I found a huge dirty-white larva. My eyes and nose told me at once that it was not a Goat Moth caterpillar, but I had no idea what it was. However, I kept it carefully. It must have been full-fed, for it soon changed into a queer-looking pupa, and after a few weeks a *P. coriarius* emerged. I never obtained more than a single specimen in any one year, and they were all females, though I did not know this at the time.

It was not until nearly thirty years later that I saw the male of this species. On 21st July, 1938, I took it on the wing, as it was flying over some flowers at dusk, looking like a large moth, in a hotel garden in the New Forest. I also found, about the same time, a crushed female lying on the garden path. It had invaded the kitchen, where it caused a panic among the domestic staff, had been stamped on by the most courageous member, and defenestrated.

The male *P. coriarius* is much smaller than the female, if my specimen, which is 29 mm. long, and is the only one I have ever seen, is of normal size. It is proportionately more slender than the female, but has a fine, substantial pair of antennae.

I do not know the distribution of this species, which I have not met anywhere except in West Kent and the New Forest. I collected insects for a good many years in East Somerset and North Berkshire, but never saw it in either county, although it has been taken in Tubney Wood, near Oxford. It does not seem to be very plentiful where it occurs: dur-

ing seven years' residence in the New Forest I saw only the two that have been mentioned. The female lays a large number of eggs, if one can judge by the mass of them that I saw in the body of the crushed specimen I found. No doubt many of the larvae are devoured in the New Forest by woodpeckers, which are so common there, but we never saw a woodpecker in our garden in Kent.

The perfect insect appears at the end of July: I remember that my Kentish specimens were all found very soon after I had returned from school for the summer holidays. The larva, by all accounts, feeds only in dead or decaying trees, so this beetle cannot be classed as a pest: if it were, we should undoubtedly hear more about it.

52 Lowther Road, Bournemouth.

[This fine insect has an English name—the Tanner beetle (from its leathery elytra, reflected also in its Latin name)—but it certainly seems little used, for the insect is not very common. It is our sole member of the mainly tropical subfamily Prioninae, which is made up of very broad robust but not brightly coloured Longicorns including some of the largest known beetles; hence its unique aspect in the British fauna.

In these Islands, as far as records go, the species is confined to England and East Wales. It occurs locally from Norfolk and Kent to Cornwall and from the Severn Valley to Lancashire—its northern limit. July to September are the months in which it is chiefly seen. Among the localities where it has been observed or taken in numbers at times are the New Forest, Epping Forest, Knole Park at Sevenoaks, Kent, and near Haslemere, Surrey; but it is by no means frequent as a rule and is mostly found by odd specimens. It is well known to fly, occasionally in swarms, on sultry evenings and nights, and has been attracted to light and also to lepidopterists' 'sugar'. By day it rests on tree trunks, or about their roots. It stridulates loudly when disturbed. Though of sluggish habits, the males fight fiercely amongst themselves. Fowler records the capture of a female containing 162 eggs, but this may be exceptional.

The larva feeds mainly in the roots of a great variety of dead or decaying trees, mostly deciduous but including pine. Oak, beech and birch are among the more usual, and it appears to favour those growing in rather damp situations in light soil on the edges of woods. For this reason, as Mr. Symes says, the species is not regarded as a pest; yet I have seen a notice of its having caused damage to telegraph poles in Suffolk. These larvae pupate in earthen cocoons as large as hens' eggs a few inches deep in the soil against the roots in which they have fed. The emergent adults leave conspicuous holes in the earth, about an inch across.

A very full account of the biology, etc., of this species has been published by Mr. E. A. J. Duffy, F.R.E.S., in 1946, *Trans. R. ent. Soc. Lond.*, 97 (17): 419-442, with illustrations.—A. A. ALLEN.]

Fifty Years Ago

(From *The Entomologist's Record* of 1902)

BEATING FOR THE 'SMALL EMERALD' (*Hemistola immaculata* Thun., *vernaria* Hb.).—Three visits to the South Downs to beat the bushes

of *Clematis vitalba* for *Geometra vernaria*, respectively paid on the 9th, 19th and 20th of the month (April) resulted in the obtaining of only a fair number, which were still very small, and in the dark skin of hibernation, for the leaf-buds had only just commenced to appear on the bushes. Subsequent experience, at a later date, proved that it is a mistake to beat for this larva too early in the season, as many things militate against success. In the first place the larva is so small, is so rigid and quiet in the tray, and so exactly resembles the immense mass of rubbish which falls with it, that searching is a most trying ordeal in the cold windy weather. Again, this quantity of rubbish which literally falls in heaps, so evidently injures many specimens, by the mortality shown later, that the net results are not adequate to the labour and discomfort involved. If operations can be deferred a few weeks later in the season, the rain and wind will have cleared the bushes naturally, and the beater has the pleasure of seeing the graceful, tapering, larva drop in his tray, made only too evident by its brilliant green appearance. With regard to the mechanical operation of the beating of this particular growth, I think it will be found that to insert the stick into the bush, and hustle it about, will yield a more satisfactory bag than to flog the delicate climber with the usual downward strong stroke. It is certainly more agreeable to the feelings of some to find that such a graceful object is not hopelessly ruined in appearance when we have worked our will upon it. Moreover, the larvae obtained by this procedure will not be injured nearly so frequently as by harsher methods, nor will they be shot into the air to fall anywhere but into the tray itself, for this larva falls readily with a sudden movement of its food-plant, and will respond quite freely to the sharp tapping hustle, as it really does not require a heavy blow to dislodge it, even if the bush would stand such treatment. I hope I shall be forgiven for dwelling on this matter, for I really think it is a point we should take into our consideration. It is not a pretty sight to see a mangled, broken bush or tree with a dense litter on the ground beneath, and it is one which may prejudice outsiders, or owners of localities, from sympathy with the pursuit, and, in the latter case, may lead to our exclusion on other occasions.—J. C. DOLLMAN.



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The following gentlemen act as Honorary Consultants to the magazine:
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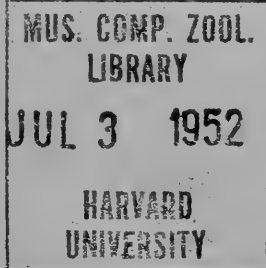
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Aberrations of *Lysandra coridon* Poda and *L. bellargus* Rott. What are the causation factors?

By E. A. COCKAYNE, D.M., F.R.C.P.

I am indebted to Mr. A. L. Goodson for the names of the aberrations shown on Plates VI and VII. All these names are valid, and it will be noticed that they differ from those given by Bright and Leeds. In many cases these authors disregarded the law of priority and did not always adhere to the definition of a form given by the author, sometimes giving the same name to an aberration of the upper side and a totally different aberration of the under side. This is unfortunate, because their nomenclature has been used so much during the last few years.

The nature of these aberrations, however, is of greater importance than the technicalities of nomenclature, and of this we know very little. We still know nothing about the causation of the form with reduction in the size and number of the spots on the under side or of those showing radiation and confluence. There are three ways by which something could be learnt. One of these is possible for anyone who lives near a locality, in which *coridon* is common. If the percentage of a common form such as ab. *arcuata*, using this name to cover the numerous named forms into which Leeds has subdivided members of the *arcuata* group, was determined by means of an accurate count in a given place each year for a number of years, we could make a useful deduction. The investigation would be laborious and all specimens caught would have to be marked in some way to avoid the risk of counting them twice. A uniform percentage of the aberration each year would be strong evidence that it was genetic, but a significant fluctuation in the percentage from year to year would almost certainly mean that it was environmental or in part environmental and in part genetic.

To prove the causation of a rare form like ab. *cinnus* or the radiated forms direct breeding experiments would be necessary. I am told that neither *coridon* nor *bellargus* is difficult to breed in captivity and that pairings can be obtained, but breeding for at least two successive years would be necessary and brother-sister matings would be needed to give an F₂ generation. If *cinnus* or a radiated form like the original parent appeared in the ratio of approximately 1:3 in the F₂ generation it would prove that the form concerned was recessive. A great risk in breeding *coridon* would be the introduction of eggs from a wild female with the food-plant, but with *bellargus*, a better species to use because it is double brooded, this risk could be avoided by obtaining the food, *Hippocrepis comosa*, from a place where *bellargus* did not occur. In the case of *coridon* it would be necessary to pot all the plants a year before using them to feed the larvae. The difficulty with such rare forms would be to get the original parent. Few entomologists would be willing to sacrifice a perfect example of a rare aberration, but they might be willing to obtain eggs from a badly damaged one.

The third method would be to carry out temperature experiments, but the need for thermostatically controlled temperatures would make this impossible for most amateurs. One would naturally start by using shock temperatures, which have been so successful with *Vanessids*. There would be difficulty in getting enough larvae. It is easy with those

Vanessids that have gregarious larvae, to take a brood and divide it into two portions, breeding half as a control at a normal temperature and subjecting the other half to a high temperature just below the lethal level. Unfortunately larvae of *coridon* and *bellargus* are not gregarious and larvae collected wild would not be members of the same brood. If there were a number of major aberrations in the portion subjected to a high temperature and none in the other portion, it would suggest cause and effect, but confirmation would be required using larvae belonging to the same brood, and the experiment would have to be repeated. It is comparatively easy to choose larvae of a Vanessid which are about to pupate and subject them to a high temperature at the critical period, but it would be very difficult in the case of *coridon* or *bellargus*, which like to pupate under rubbish or just below the surface of the earth. The

EXPLANATION OF PLATE VI.

Lysandra coridon Poda.

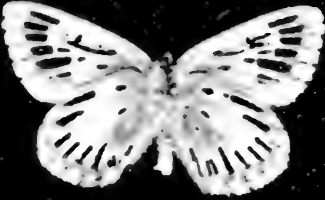
- Fig. 1. Ab. *antiradiata* B. & L. + ab. *costaextrema* B. & L.
 Fig. 2. Ab. *radiata* B. & L. + ab. *anticentriuncta* B. & L. + ab. *addenda* Tutt. Figured Bright and Leeds, Pl. 18, fig. 10.
 Fig. 3. Cited as ab. *extrema* B. & L. and figured Pl. 18, fig. 9, but is more extreme than the type, figured Pl. 10, fig. 4, and does not show the same kind of striation. The striation in the type is formed by the fusion of numerous dots and runs outwards towards the margin, whereas this specimen has striations with sharp edges, each filling the whole of an interneural space, and they run inwards towards the base.
 Fig. 4. Trans. ad ab. *radiata* B. & L.
 Fig. 5. Ab. *radiata* B. & L. + ab. *costajuncta* Tutt + ab. *bibasijuncta* B. & L.
 Fig. 6. Ab. *radiata* B. & L. + ab. *addenda* Tutt + ab. *elongata* Tutt + ab. *posttrielongata* B. & L.
 Fig. 7. Ab. *radiata* B. & L. + ab. *bilineata* Tutt + ab. *posttrielongata* B. & L. Figured Bright and Leeds, Pl. 18, fig. 24.
 Fig. 8. Ab. *antiradiata* B. & L. + ab. *extensadiscoidalis* Tutt + ab. *costajuncta* Tutt on the right side. Figured Bright and Leeds, Pl. 18, fig. 8.
 Fig. 9. Ab. *sagittata* B. & L. + ab. *obsoleta* Tutt.
 Fig. 10. Ab. *sagittata* B. & L. + ab. *anticoobsoleta* Tutt + ab. *postobsoleta* B. & L. + ab. *limbojuncta* Courvoisier.
 Fig. 11. Ab. *discreta* Tutt + ab. *impuncta* Courvoisier + ab. *postobsoleta* B. & L.
 Fig. 12. Ab. *cinnus* Hübner (*caeca* Courv.) + ab. *sagittata* B. & L. Figured Bright and Leeds, Pl. 18, fig. 17.
 Fig. 13. Ab. *anticoobsoleta* Tutt + ab. *postobsoleta* B. & L.
 Fig. 14. Ab. *cinnus* Hübner + ab. *pallida* Tutt.
-

critical period, if there is one at all, is unknown in these blues. It seems to me very unlikely that Lycaenid pupae under natural conditions would be subjected to shock temperatures and I do not think that the rare aberrations are produced in this way. Unlike the naked and exposed pupae of Vanessids the pupae of *coridon* would scarcely ever be exposed to the high temperature necessary, and if such aberrations are caused by the combined action of an environmental and a genetic factor the chance would be still less.

With regard to the radiated forms and the various forms with union between the spots nothing is known. We do not even know whether the forms in which only two spots are united, such as *arcuata*, *costajuncta*, *basijuncta*, and *limbojuncta*, are genetic nor do we know whether forms which are combinations of two of these are determined by two genes or by a single gene, assuming that they are genetic at all, still less do we know about the complex combinations like those figured on the plates.



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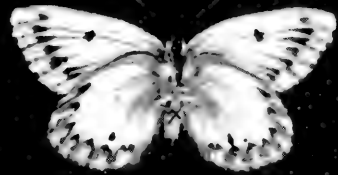
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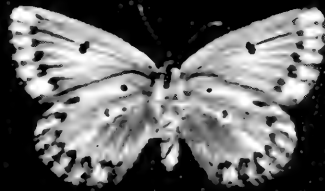
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It would not be very difficult to carry out breeding experiments with the simple forms of union and prove whether they are genetic. When the cause of these has been elucidated it will be time to experiment with the rarer combinations. It is possible that minor aberrations may be produced by degrees of cold or heat far short of those nearly lethal temperatures that are necessary to produce the Vanessid aberrations. A German has claimed that reduction in the size and number of spots has been produced in this way. Attempts have been made recently to prove that these are genetic. R. E. Parsons (*Ent.*, 1950, **83**: 224) obtained eggs from two females of *coridon* with completely obsolete hind wings and bred 62, none of which had any spots absent. H. J. Turner (*Ent.*, 1950, **83**: 266) obtained eggs from a few females of *bellargus* ab. *postobsoleta* and one *caeca*, mixed the broods, and got 150 pupae, but bred no *obsoleta* and no *caeca*. He does not state how many were bred. I contrast with these negative results those of G. Shepherd (*Ent.*, 1948,

EXPLANATION OF PLATE VII.

Lysandra bellargus Rottemburg.

- Fig. 1. Trans. ad ab. *conjuncta* Tutt.
 Fig. 2. Trans. ad ab. *conjuncta* Tutt on forewings only.
 Fig. 3. Ab. *anticoobsoleta* Tutt + ab. *conjuncta* Tutt on hindwings only.
 Fig. 4. Ab. *subtuspartimradiata* Oberthur. with junction of submedian and marginal spots on hindwings named ab. *limbojuncta* in other species.
 Fig. 5. Trans. ad ab. *conjuncta* Tutt (asymmetrical).
 Fig. 6. Ab. *striata* Tutt on forewings and ab. *conjuncta* Tutt on hindwings.
 Fig. 7. Ab. *striata* Tutt (*extrema* Courvoisier).
 Fig. 8. Ab. *atrescens* Tutt + ab. *obsoleta* Tutt.
 Fig. 9. Ab. *krodeli* Gillmer (*caeca* Courvoisier), with white ground colour.
 Fig. 10. Ab. *parvipuncta* Tutt.
 Fig. 11. Ab. nov. No marginal chevrons on forewings + ab. *conjuncta* Tutt on hindwings.

Polyommatus icarus Rottemburg.

- Fig. 12. Ab. *radiata* Courvoisier + ab. *elongata* Tutt on forewings; all spots elongated on hindwings which is not named.
 Fig. 13. Ab. *radiata* Courvoisier on left side and normal on right side.
 Fig. 14. Ab. *radiata* Courvoisier.
 Fig. 15. Trans. ad ab. *radiata* Courvoisier.
 Fig. 16. Ab. *obsoleta* Gillmer.

81: 212) who from two females of *coridon* with no spots on the hindwing and some missing from the forewing bred 103, of which 9 were *obsoleta* and the rest normal. Thus there are two negative results, one in *coridon* and one in *bellargus*, and one positive one in *coridon* with a ratio of approximately 1:11, far below that of a simple mendelian one. None of the experiments was carried beyond the F1 generation. The results suggest incomplete dominance or imperfect penetrance or the action of an environmental factor in addition to a genetic one. Using broods from *obsoleta* females and dividing them into two parts and subjecting the pupae of each to moderate heat or cold might throw light on this obscure problem. F2 generations should also be bred, and treated in the same way.

In Lycaenids, especially *coridon* and *bellargus*, asymmetry is relatively common. An example in *bellargus* is given on Plate VII, fig. 13. Many of these asymmetrical examples are to some extent crippled, and the same is true of asymmetrical specimens of *Abraxas grossulariata* and *Arctia caja*, but we have no idea how the unusual distribution of

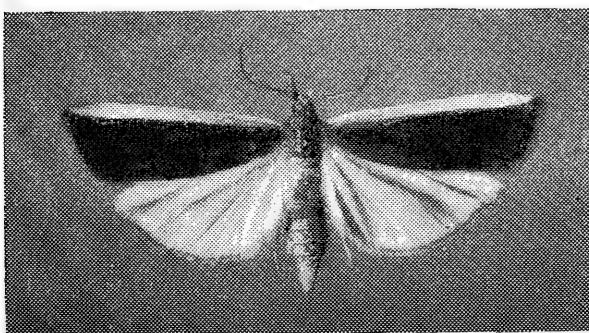
pigment and pattern is brought about. Some of these asymmetrical insects, especially the perfect ones, may be somatic mosaics caused by the loss of an autosomal chromosome or originating from a binucleate egg, just as gynandromorphs may be caused by loss of an X-chromosome or by the fertilisation of both nuclei of a binucleate egg. The number of asymmetrical *Lycaenidae*, however, seems unduly high for this to be the sole cause. Another suggestion has been offered, namely that if a pupa has been subjected to greater heat or cold on one side than on the other the two sides may differ greatly, but there is no evidence to support this hypothesis.

We are indebted to Mr. S. G. Castle Russell for generously defraying the cost of the two plates of aberrations, all of which are in his own wonderful collection.

Chilo cicatricellus Hübner confirmed as British

By J. M. CHALMERS-HUNT, F.R.E.S.

This fine species, included in our fauna on the authority of a single specimen, exhibited by Edwin Shepherd at the meeting of the Entomological Society of London in September 1852, has long since been relegated to the list of doubtful British *Lepidoptera*. It must, however, be reinstated, as I captured a single imago in Kent in 1951. My



[Enlarged: the alar expanse of this specimen is 38 mm.]

example, a female in fine condition, was taken at light. Shepherd's specimen is stated to have been taken near Dover. It was ultimately acquired by Dr. P. B. Mason, but its present whereabouts is not known.

Barrett (*Lepidoptera of the British Islands*, 1905, Vol. x, pp. 127-128) and Meyrick (*Revised Handbook of Brit-*

ish Lepidoptera, 1927) each give a brief description of *C. cicatricellus* Hüb.

Wing expanse 27 to 38 mm., with broad, retuse, light to dark brown forewings, having a broad white or yellowish-white stripe along the costa: and the hindwings white.

In my specimen the wing expanse is 38 mm. The costal stripe is yellowish-white. Forewings are of the dark brown form: and in this respect the moth resembles those examples from the Zeller Collection in the British Museum (S. Kensington), with which it has been compared.

During the present year, one hopes to be able to work for the species, and thereby gain some idea of its status in this country.

Abroad, *cicatricellus* inhabits Central Europe and South-East Russia. It is stated that the larva feeds in the stems of *Scirpus lacustris*. I should add that my specimen has been submitted to the scrutiny of the

following specialists:—Messrs. H. C. Huggins, L. T. Ford, S. N. A. Jacobs, and J. D. Bradley, all of whom agree to this determination.

[In the Rothschild Collection at Tring there is a specimen of this insect, which came from the Bright Collection. This may be the Mason Coll. specimen. The species is figured in Leech's *British Pyrales*, Pl. 7, fig. 3.

According to Lhomme (*Cat. des Lép. de France et de Belgique*, 2: 85) this species is "peu frequent" in France and is an inhabitant of mountain regions, especially in the south (Midi). The imago is on the wing (in France) from May to July. All the French localities which Lhomme gives are south of Lat. 46° N. except Vendée, where he himself had taken it. The larva feeds and pupates in the stems of bulrush (*Scirpus lucustris* L.) and has been found up to July (Lhomme quoting Lafaury).—Ed.]

Butterflies in the Coastal Region of North Wales

By J. ANTONY THOMPSON, M.A.

During the last seventy years there have been published at least three 'Lists' of Lepidoptera which include the coastal strip of North Wales, and also certain supplements thereto. All three of these have been compiled by entomologists of considerable repute. The process was begun by Alfred Walker in 1885; this publication was revised by George Day in 1903 and finally we have Mr. Gordon Smith's beautifully produced work of 1948. All these were published in the *Proceedings* of the Chester Society of Natural Science, etc.; yet these works, although they have obviously entailed considerable labour and great care, do not attempt to deal with the ecological aspect or (except in a very few instances) with any forms or variation peculiar to the district. Moreover, these three publications are based, largely, on information supplied by visitors a point which is well illustrated by two references to *Pararge aegeria* L., Day describing this butterfly as occurring "only very sparingly generally" and Gordon Smith only admitting that the species "appears to have become locally common". In fact, *aegeria* is one of the most abundant species in the district, occurring almost everywhere, even on the tops of the mountains at altitudes of a thousand feet and more. Except, however, in very forward seasons, it is not out at Easter and, as a rule, there are not many to be seen in August, the second and later broods, as with all butterflies in this area, never producing many insects. There are many instances of this kind, particularly with regard to Anglesey, because of conventional holidays.

Another handicap under which these Lists have been compiled is the restriction to county boundaries, usually political divisions with no scientific significance whatsoever. It is indeed a pity that so much valuable time and effort should be spent on "county lists" instead of on zoogeographical zones. A third disadvantage is the inclusion of so many isolated localities based on records from collectors who have visited only one village in the district. An outstanding example of this is provided by Day's treatment of *Aricia agestis* Schiff. (*astrache* Bergstr.), repeated by Gordon Smith. *Agestis* occurs on all the limestone hills in the district but is single brooded in many areas and occurs in June and early July, during which months there are few visitors in North Wales.

I lived in the district for twelve years and although scholastic duties claimed a great part of my time several phenomena of ecology and variation came to my notice. The whole area needs a much fuller investigation by lepidopterists than has so far been attempted. The same 43 species are listed by Day and Gordon Smith, one of which, *antiopa*, is of no local significance and another, *hyale* (of which there is one record only), seems to lack relevance. I have had personal knowledge of 37 of these species (including *antiopa*!)—a useful total for a district in what might be described as the North Midlands and which has a very short summer, butterflies (except for the Nymphalinae) being to all intents and purposes finished by the end of July. I feel sure that more concentrated work in this area would be well worth while. Local phenomena which particularly interested me concerned the following species.

Pararge aegeria L. ssp. *egerides* Stdgr. This butterfly is one of the most interesting in North Wales and one of the most ubiquitous, occurring in every conceivable type of locality, even by the seashore. Although I have collected over the whole of Great Britain for a good many years I have never seen *aegeria* so consistently present everywhere one went. There is a very interesting aberration or race which occurs towards the top of the mountains that form the hinterland on the south-west side of the River Conway; here *aegeria* is single brooded, occurring in June, and of a size considerably larger even than isolated giants which I have found in other localities. The light markings are more prominent than usual and pale. I name this form **drumensis** ab. nov. I cannot, at the moment, designate the type and allotype specimens as my series was lost at the end of the War. As soon as circumstances permit I intend to obtain some of these insects for the National Collection and will publish a short intimation of this when it has been done.

While on the subject of this highland race of *aegeria* I should like to say how interesting it is to set out on foot from one of the riverside villages and walk up the mountains towards Snowdonia. The lanes are full of *aegeria*, the incidence of broods decreasing as the higher altitudes are reached until, when the lane has turned into a bare mountain track with few trees in sight, this large single brood is found. Thus we have a cline from the usual form with its many broods to the large pale race with its solitary summer flight on the bare mountain side.

Eumenis semele Hübner. In this district *semele* can be found showing every divergence of form except that with the brilliant white bands on the underside of the hindwings which one gets on the chalk. On the Flintshire hills, for instance, *semele* is large and brilliant with the pale areas on the upper side of a remarkably bright orange; on the sandhills there occurs a large dull form whose only peculiarity is the lack of anything exciting! On the Great Orme's Head is the subspecies *thyone* Thompson, which occurs in immense profusion and provides quite a number of obsolete forms.

Maniola tithonus L. This pretty little butterfly is very common in all suitable places and I only mention it here because of the prevalence of extreme extra-spotted forms in one or two localities. Let those who will go to Tavistock!

Coenonympha tullia Müller. If one goes to Arenig at the suitable season one will be interested to observe a large number of collectors gathered in close proximity in a very small area, certainly much less

than one square mile, many of whom have come considerable distances for this butterfly. The fact is that *tullia* occurs commonly along the whole Vale of Ffestiniog and thence, less commonly, towards the coast, reaching localities within 20 miles of the popular holiday resorts. It shows tremendous variation, specimens as heavily spotted as some of the best *philoxenus* turning up at one end of the cline, together with individuals which might have come in kilt and sporran; admittedly extreme forms are rare and the majority are of the form *C. tullia tullia*,* but there is no doubt that if some gentleman chose to take the trouble he could, in a comparatively short time, display in his cabinet three series labelled respectively Rannoch, Arenig and Whixall Moss without causing any suspicion to arise in the breast of a beholder who trusted his fellow man. I must crave indulgence for including this species in an article dealing with the coastal area, but it approaches within 20 miles of the sea and is a most interesting butterfly. There are a number of localities for *tullia* in Caernarvonshire, which county is omitted from Gordon Smith's List in connection with this species.

Brenthis selene Schiff. and *B. euphrosyne* L. The only point worth mentioning about these species in North Wales is their abundance on rough ground and in marshes on the mountains, with scarcely a tree in sight, both near the coast and inland, at elevations up to a thousand feet at least and possibly still higher. Several southern collectors have remarked to me on the vividness of the colouration on the underside of the hindwings of *euphrosyne* compared with those in other places, but this never struck me as being sufficiently conspicuous to justify the indulgence of new nomenclature; whether they are similar to the Scotsmen, which I believe are brilliantly coloured, I cannot say as I have had no opportunity of inspecting enough Scottish specimens. There is a strong tendency in *selene* towards a reduction, both in size and in number, of the black spots on the upper side and I have taken some very nice aberrant forms of this kind in the mountain marshes above 700 feet, but never on the low ground. Aberration towards increase of markings or black specimens is, to the best of my knowledge, unknown in the district.

Argynnis cydippe L. The only Caernarvonshire locality mentioned by Gordon Smith is Portmadoc, so perhaps it is worth mentioning that the butterfly is locally common in many suitable woodland localities in the same county, especially in the Conway Valley.

Euphydryas aurinia Rott. Again the only Caernarvonshire specimens mentioned by Gordon Smith are two isolated examples, so it may be as well to record the presence of more than one large colony on the higher slopes of the hills south-west of the Conway River. These Welsh colonies seem to have more than the usual propensity to move *en bloc* and one can never be quite sure, to within a mile or so, where they will be found the following season. Some day I hope to be able to return to this district for a short time and to try to find out when and why *aurinia* has so strong a nomadic habit in this particular area.

Polygonia c-album L. One often sees references to the days when *c-album* was scarce and allegedly confined to one or two favoured areas in Worcestershire, Herefordshire and Monmouthshire. In fact, this

*Nominotypical *tullia* does not occur in the British Isles *Polydama* Haworth is the correct name.—ED.

butterfly was quite common in the coastal areas of South Denbighshire and Caernarvonshire throughout the whole of that period, which I believe is unknown to most entomologists. The var. *hutchinsoni* is extremely rare, although the nominotypical form is now one of the commonest butterflies in the district, which accounts, I suppose, for the fact that second brood specimens are very seldom seen.

Plebejus argus L. The chief interest of this little butterfly is found in my subspecies *caernensis* which I described in a privately published booklet about fifteen years ago. (I have still plenty of these booklets if anyone would care to have a copy). The biological significance of this race has subsequently been dealt with by Dr. E. B. Ford in his book *Butterflies* (London, 1945). It is worth recording here that Mr. A. J. Merchant, with my agreement, made an attempt to establish *caernensis* in the Dulas Valley in 1943 and 1944. Both he and I left Wales soon after this and neither of us has been able to revisit the spot to see what has become of the attempt. Mr. Austin Richardson (*Entom.*, **84**: 153) records another interesting race which he discovered in Caernarvonshire, but his note is so brief that it is impossible to tell either the precise nature of this form or whether it occurs sufficiently near to the coast to come within the scope of this article.

Aricia agestis Schiff. This butterfly provides one of the most interesting distributional problems of the district. Over the greater part of the area it is single brooded, but in certain favoured spots in the more southern parts the usual two broods occur. In all districts, though more especially where it is single brooded, it produces a form which is transitional to insects found in the extreme North of England having the orange marginal spots on the upperside much reduced in size and number especially in the male, which often lacks any orange on the forewings, that on the hindwings being reduced to a few small spots only.

In Day's List a specimen of *agestis* is recorded by Imms which is obviously of the common form which has the discal spot ringed with white. Day, however, makes the extraordinary blunder of adding a footnote saying "This is apparently the variety *artaxerxes* F." No specimen with the white spot of *artaxerxes* has, as far as I am aware, ever been taken in North Wales. There is a corresponding reduction of the black centres to the underside spots, thus producing a resemblance to the form which is sometimes referred to as "*salmacis*". This would seem to be some kind of link in the cline from the typical South of England examples to the northern *artaxerxes*; but the ecological problem is complicated by the fact that the cline is broken by gaps both in the north and in the south and that this Welsh form is a western outcrop from the direct line of distribution.

Polyommatus icarus Rott. This is another species in which tendencies are developed which one would expect to find only further north or further west. In the more northern parts of the district under discussion *icarus* is single-brooded and nowhere is the second brood strong. On the sandhills is to be found a large form, transitional to *clara* Tutt, which produces many beautiful blue females, some of which might have come from the Scottish forms of this variety though none is as extreme as the Irish. Further inland, however, the butterflies cease to show this tendency to *clara* and become more like the ordinary English insect.

Celastrina argiolus L. The only point of interest about this species is that it is, as a rule, single-brooded and usually larger than most English examples. I have once seen a specimen which was apparently a second brood insect, flying in the town of Conway in August; but this of course might only have been a case of delayed emergence. It is curious that the first and only brood should occur at the very beginning of the season, earlier than in many southern English localities. This early emergence of insects is a feature of the district, most of the spring butterflies, such as *aegeria*, *rapae*, etc., appearing usually a week or two before the earliest English records which I have seen published in most magazines.

Thecla quercus L. This butterfly, which is rather local in the district, presents no noteworthy form and I mention it here only for the sake of recording an interesting fact which I discovered when collecting in some woods in the Conway Valley. I had spent the best part of the afternoon in securing one or two specimens by means of a net slung on to the end of a twenty foot pole and was very dissatisfied with my efforts when I noticed that the butterflies were beginning to come lower of their own accord. As I watched, I discovered that they were following the line of the sun, which was now beginning to set, and when eventually the sun reached the horizon, *quercus* was flying in numbers round the lowest branch of the oak. I was able, without difficulty, to dispense with my pole and to secure as many specimens as I wanted. It seems particularly fond of resting on the branches of ash, though whether this is due to its preference for that particular tree or to the fact that ash is abundant in suitable localities I know not.

Pieris brassicae L. There is nothing of interest locally about this butterfly, but the banded form of the female figured by Gordon Smith as having been taken by him near Chester is not uncommon throughout the North Welsh area. Gordon Smith includes no note to this effect and, by omission, might give one the impression that this form has been found only in Cheshire.

P. napi L. The only thing to record about this butterfly is my disappointment when I found that on the higher mountains, where I had hoped to take some interesting forms, *napi* produced nothing whatever out of the ordinary. One of my pupils took a very nice female gynandromorph in the School garden at Prestatyn in April 1943, but despite much search and the breeding from many other females from the same garden we never found another.

Gonepteryx rhamni L. Although there are several records of this butterfly in Day's List, from which it would appear to be fairly common, I never saw it, despite a particularly intensive search in all the localities given by Day, until 1940, when one or two odd specimens turned up. It continued to increase in numbers each year and by 1943 was not uncommon throughout the district. In 1945 there was not one to be found anywhere and at the end of that year I left North Wales. This phenomenon of sudden appearance and disappearance is, I believe, not unknown in *rhamni* but is still probably an event worth recording. I might mention that the foodplant is plentiful everywhere.

Erynnis tages L. This butterfly occurs very commonly throughout the area in an exceedingly large and bright form which several southern collectors when visiting me have spoken of as being very interesting.

Merchant took, in 1941, at an altitude of eight hundred feet on Drum, a very beautiful aberration in which the ground colour of most of the insect was precisely the shade of creamy milk, with the markings indistinct.

Colias calida Verity : the correct name for the butterfly lately added to the British list

By E. A. COCKAYNE, D.M., F.R.C.P.

There still seems to be some difference of opinion about the correct name for the new species of *Colias*, of which the larva feeds exclusively on *Hippocrepis comosa*. Berger and Fontaine use the name *alfacariensis* Ribbe (1905) in their paper (*Lambillionea*, 1947, **47**, 91; 1948, **48**, 12, 21, 90), but Berger says the description is unsatisfactory. In addition to the nominotypical form he recognizes two subspecies, *australis* Verity and *calida* Verity. Actually Ribbe (*Soc. Ent.*, 1905, **20**, 137) gives a very clear description saying that the upper side of the female is greenish-white like that of *Colias croceus* ab. *helice* Hübner and that the under side is like that of *helice*. In the Rothschild collection at Tring there was one of the original specimens taken by Ribbe himself and a long series of males and females in perfect condition from the same locality. The upper and under side of the female agrees with Ribbe's description and the under side of the male is browner than that of *hyale* Linnaeus. *Alfacariensis* was taken in the Sierra de Alfacar, N. Granada, Spain, at an elevation of 1800 metres and the specimens of *Colias* taken by him at lower levels in the same district are *hyale* ssp. *australis* Verity. I think some of these are the insects Berger saw in the Oberthur collection and in the Paris Museum and mistook for *alfacariensis*. If so, his confusion as to the appearance and distribution of *alfacariensis* is understandable. *Alfacariensis* Ribbe is probably a distinct species differing from both *hyale* and the new species.

Hemming (*Lambillionea*, 1950, **50**, 2) has shown that in any case *alfacariensis* is not the correct name for the new species because it was only raised from infra-subspecific to specific rank by Berger in 1948 and Berger agrees with this decision and with its consequences that *australis* Verity becomes the correct name for the new species and that *calida* Verity is a subspecies of it.

Verity (*Rhopalocera Palaearctica*, 1911, 347) says that in Andalusia, Spain, there flies a beautiful race, very distinct on account of the yellow colour, the males being extremely bright especially on the under side, a high proportion of the females being yellow, and there being a great reduction in the extent of the black markings. He names this *australis* and since he calls it a race it ranks as a subspecies. He gives no figure and treats it as a race of *hyale* Linn. There is nothing in this description to convince anyone that *australis* is the new species. In fact, the high proportion of yellow females is against it, for females of the new species are purer white than those of *hyale* and yellow females are rarer than in that species. As I have said before the specimens from Granada and Andalusia in the Tring Museum have the facies of *hyale*. When Verity described and named *calida* he did not compare it with *australis* and surely he would have done so if it had had any resemblance other

than the rich yellow ground colour and reduced black markings. Berger brings forward no satisfactory evidence that *australis* is the new species and his bald statement to that effect is not acceptable. Hemming merely gave an opinion on the nomenclature and his decision that *australis* has priority over *alfacariensis* cannot be regarded as support for Berger's conclusion that it is the correct name for the new species. He was only giving an interpretation of how the new rules affected the names, which Berger placed before him, and not deciding which was the true name for the species.

Having discarded both *alfacariensis* and *australis* the only names to be considered are *vernalis* Verity (*Rhop. Pal.*, 1909, 222, pl. 47, fig. 32) and *calida* Verity (*Ent. Record*, 1916, 28, 99).

Verity (1909) gives the name *vernalis* gen. vern to the first generation of *hyale* and says it differs from the summer generation by its smaller size, the pale ground colour, sulphur or canary yellow; the shape of the wings is distinctly rounded at the apex and the termen is more or less convex; the black bands are reduced and often completely absent on the hindwings; finally on the under side the row of antemarginal spots is much accentuated and the green scales are a little more abundant. This description clearly refers to the new species and the figure is characteristic of it. If there were any doubt about this, it would be set at rest by his treatment of *vernalis* in his *Farfalle*, where he makes it gen. vern of race *calida*.

In the *Entomologist's Record*, 1916, he says the beautiful and very brightly coloured summer generation of Southern Europe = *calida* and cites as cotypes a male and female from Tuscany figured (*Rhop. Pal.*, 1909, pl. 40, figs. 31 and 36). Both figures represent the new species. In *Le Farfalle Diurne d'Italia*, 1947, 3, 258, 266, he says a giant "sotto-razza" *ubercalida* occurs in the south of France and names the first generation of this *anteubercalida* (Pl. 35, fig. 8) and the second and third generations *ubercalida* (Pl. 35, figs. 9, 10). These also belong to the new species.

Vernalis Verity (1909) appears to be the first name which without doubt belongs to the new species. but it was given to a seasonal form and under the new rules of nomenclature it is of infra-subspecific rank. The same remark applies to *calida* Verity (1916), which was given to the second and third generations. *Calida*, however, was raised to subspecific rank by Verity himself (*Ent. Record*, 1923, 35, Suppl. (15).). There is no proof whatever that ssp. *australis* Verity is the new species and a good deal of evidence that it is a subspecies of *hyale* Linn., but there is definite proof that *calida* Verity is the new species.

The synonymy is:—*Colias calida* Verity (1923).

vernalis Verity (1909) gen. 1.

calida Verity (1916) gen. 2 and gen. 3.

autumnalis Rocci (*Atti Soc. Ligust. Sc. Nat.*, 1920, 30, 28)
gen. 4.

ssp. *ubercalida* Verity (1947).

anteubercalida Verity (1947) gen. 1.

ubercalida Verity (1947) gen. 2 and gen. 3.

Specimens taken in England are nominotypical *calida* Verity and it is to be hoped that entomologists will use this name in future for the

Colias with a larva that feeds exclusively on *Hippocrepis comosa*. They will find a useful summary of the differences in appearance and habits between it and *hyale* illustrated by figures of egg, imago, larva and pupa in a paper by Vallins, Dewick, and Harbottle (*Ent. Gazette*, 1950, 1, 113), though the name *australis* is used instead of *calida*.

A good coloured figure of a male is given in South's *Butterflies of the British Isles*, Pl. 21, fig. 1.

Familiar butterflies in North Africa II.

By Brigadier C. G. LIPSCOMB, D.S.O.

My former notes (*Ent. Rec.*, 64: 136) on familiar butterflies in Libya brought the record of my observations up to the beginning of March this year and there I had intended to leave it. However, further discoveries and observations have been so interesting and unexpected that I feel compelled to continue the story. My observations are still based on what I have seen rather than captured as I had no collecting apparatus with me, but I am satisfied that they are none the less accurate.

Vanessa cardui continues to be by far the commonest butterfly, particularly in the neighbourhood of Tripoli, where I was for a few days at the beginning of April. South of the town and stretching for some 20 to 30 miles inland is a vast plain, part cultivated and part sandy semi-desert country. Here *cardui* swarmed in countless thousands in all stages of development. Apart from the butterflies themselves every thistle had its quota of caterpillars while others were crawling about the ground searching for their foodplant. It was indeed a remarkable sight. I mentioned what I had seen to an entomological friend in the town and he told me that about the middle of March he had seen what he described as a great cloud of these butterflies flying northwards over the town and out to sea. Perhaps this early migration accounts for the appearance of this butterfly in England during March, as has been reported in this magazine.

On 15th April I visited Ain Mara, a valley 20 miles west of Derna, in the heart of the Jebel and some 1,200 feet above sea level. As its Arabic name implies there is a spring here and a very restricted area remains green throughout the year with short grass, trefoils of various kinds and docks all in evidence. The first butterfly I noticed was a blue which, when it settled, I was able to identify as a ♂ *Polyommatus icarus*. This was the only specimen of its kind that I saw, but shortly afterwards I spotted a copper on the wing which proved to be *Lycaena phlaeas*, of which further specimens were observed during the course of my search. Both these butterflies were identical in every way with British specimens.

All the year round surface water is almost unknown in this part of the world and Ain Mara with its green meadows is unique in this respect. As a result I am fairly confident that these two butterflies will not be found anywhere else in Libya.

On two occasions during April I have seen single specimens of *Pararge megera*, one at Ain Mara and the other in a wadi a few miles to the west of it. Apart from a slight darkening of the undersides of the hindwings both butterflies were identical in habits of flight and markings with one of our home specimens.

On 26th April I was motoring from Benghazi to Derna and stopped to eat my lunch at the top of the Tocea Pass where the road from the Benghazi plain climbs up on to the Jebel near Barce. As I was munching my sandwiches I saw a small brown butterfly fluttering round a bush and when it eventually settled with expanded wings it proved to be a ♂ *Maniola tithonus* indistinguishable from a British specimen except for a slight increase in the light markings of the underside of the hindwings. Further search produced three more specimens including two ♀♀, so there was no doubt about their identity. To the best of my knowledge none of these last four butterflies is migratory and the interesting question remains as to how they originally got to this out of the way corner of Africa.

The Jebel el Acbar, to give it its full name, is a mountain mass of limestone stretching along the coast of Africa for 200 miles between Benghazi and Derna and at its widest point perhaps 30 miles deep. It is bounded on the landward side by desert conditions and is nowhere less than 1,000 feet high rising in parts to 2,500 feet. Bushes of various sorts grow thickly on the rugged hillsides and among them juniper, red arbutus and rosemary would be familiar to those at home.

In common with the rest of the country it suffers a six to eight months' drought each year, but because of its elevation remains comparatively cool. During the wet winter season lasting till March flowers of all kinds grow in the greatest abundance and variety. Such then is the Jebel and it is the home of three common European birds, the wren, the blue tit, and the chaffinch. The first two are rare and very local while the chaffinch is widespread. The collecting of specimens of these birds has recently been one of the main aims of an expedition sponsored by the British Museum of Natural History. All three are non-migratory and resident all the year round. It is considered that they have survived since the days when Africa was joined to southern Europe, gradually adapting themselves to changing conditions. It seems reasonable to suppose that these non-migratory butterflies that I have described are survivals from the same period. Perhaps others who read these notes and are better informed than I am will be able to enlarge on this theory.

A fifth butterfly, which could almost be included in the above category, is the South European form, *cleopatra*, of *Gonepteryx rhamni*. I have seen it commonly in April near Cirene, the ancient Roman settlement on the Jebel. The pink suffusion on the forewings of the ♂♂ being most noticeable when in flight.

Of the other migrant butterflies described in my former notes *Pontia daplidice* was still very common at the end of April, but *Pieris rapae* has remained scarce and I have seen no further specimens of *Vanessa atalanta* or *Papilio machaon*. *Colias croceus* has never appeared in any numbers but single specimens are liable to turn up anywhere.

It would in consequence seem that with the exception of *P. daplidice* and *V. cardui* the other migrant butterflies noted are strays whose headquarters are probably further west in Tunisia and Morocco where conditions are less arid and their foodplants in consequence more abundant.

[The swarms of *V. cardui* seen by Brigadier Lipscomb in January and February would account for the migration which arrived in this

country in early March. The "great cloud" of this butterfly which he mentions must have been a much later migration, which never reached us perhaps because of the cold weather all over Northern and Central Europe. *V. cardui* flies at 12-16 miles an hour at the most.—Ed.]

A Moth-Trap in Folkestone in 1951

By A. M. MORLEY.

From towards the end of June I was fortunate in having the loan of Dr. Riddell's m.v. moth-trap for a good many weeks on condition that we shared the captures. The arrangement was particularly welcome in a season when I had to spend most of my time in bed. The list that follows of some of the species taken may be of interest, partly as showing what a number of moths occur in a part of Folkestone which I had come to regard as a poor hunting ground, but mainly as an indication of the distance to which moths appear to travel under certain conditions.

The houses from which we worked the lamp are situated on the northern side of Folkestone not far from the golf course, through which runs a small stream with reeds along part of its course. The sea is a mile away as the crow flies and the Downs nearly as far in the opposite direction, while it is a mile and a half to the nearest part of the Warren. There is a small wood on the Downs about a mile and a half away to the north-east, but the nearest large woods are Reinden Wood to the north, Asholt Wood to the west, and the Hythe Woods to the south-west, each about two and a half miles away.

The trap was placed either on the lawn at the back of my house or in a glazed porch. In the former position it produced about twice as many moths as in the latter; on the other hand some species and a good many individuals did not enter the trap at all but were found on the walls of the porch. In all I used the trap 58 times, but the last six times, in November, were entirely unproductive.

In the notes which follow I have given two dates, that of the night when the trap was set and that of the morning when it was emptied, since it is not possible to tell whether a moth arrived before or after midnight.

I. The commonest two species were *Agrotis exclamationis* and *Amathes c-nigrum* (second brood), each of which persisted over a long period. Of the former 125 came on the night 14th-15th July; of the latter 302 on 10th-11th September, and the last on 6th-7th November. On the other hand *Agrotis segetum*, which often abounds in the second brood, was relatively scarce, only nine being taken. For two nights there was a plague of *Hyponomeuta padella*. On the morning of 4th August I estimated that there were 700 in the trap and the porch.

II. The following may well have bred in Folkestone though they have been either rare or not recorded in the town since I came here in 1927:—*Pheosia tremula*. *Brachionycha sphinx* (1). *Tethea ocularis* (3). Not known to occur in the district till one was taken in 1950. *Gastropacha quercifolia* (3 ♂♂). *Cosmia pyralina* (1, Dr. Riddell). *Phragmatobia fuliginosa* (2, in August). *Apatele megacephala* (1). *Apatele rumicis* (1). *Atethmia xerampelina* (1). *Hadena w-latinum* (Dr. Riddell took about 20 in June). *Hadena compta* (1, 18th-19th

July). The first apparently to be taken in Folkestone. *Horisme tersata* (1). *Chesias legatella* (25, all ♂♂; 29th-30th October). *Thera variata* (1, 30th-31st October). *Ennomos autumnaria* (1). Apparently now much rarer in the town than it used to be.

The comparatively large numbers of *H. w-latinum* and *C. legatella* may be due to the fact that not long ago a small area of the golf course was planted with broom, either to brighten its appearance or to make the game more difficult.

III. The following appear to belong to the Downs (and the Warren) rather than to the town:—*Diacrisia sannio* (1). *Phytometra viridaria* (1). *Agrotis cinerea* (2, Dr. Riddell). *Scopula ornata* (1). *Hadena lepida* (1). *Anaitis efformata* (1). *Tholera popularis* (1). *Tholera cespitis* (1). *Ortholitha bipunctaria* (1). *Eremobia ochroleuca* (3; Dr. Riddell also took several). *Thalpophila matura* (1). *Ortholitha chenopodiata* (2). *Procus fasciunculus* (3). *Rivula sericealis* (2). *Perizoma bifaciata* (1). *Loxostege palealis* (1). *Salebria semirubella* (3). *Nephopteryx obductella* (1).

IV. I should have looked for the following in the Warren or near the sea:—*Euproctis chrysorrhoea* (12). *Hemistola immaculata* (1). *Malacosoma neustria* (1). *Mesotype virgata* (1). *Eilema lurideola* (3). *Aspitates ochrearia* (1). *Hadena albimacula* (1). *Eumichtis lichenea* (3; Dr. Riddell took a good many more). *Apamea anceps* (1). *Evergestis extimalis* (2). *Lygephila pastinum* (1).

V. Among species one finds as a rule in woodland areas were:—*Pheosia gnoma* (1; Dr. Riddell took 2). *Habrosyne derasa* (6). *Thyatira batis* (1). *Drepana binaria* (3). *Drepana falcataria* (1). *Drepana lacertinaria* (1). *Apatele auricoma* (1, 6th-7th August). *Triphaena fimbriata* (6). *Dipterygia scabriuscula* (5). *Rusina umbratica* (1). *Amphipyra pyramidea* (1). *Graptolitha ornithopus* (1). *Cucullia asteris* (1). *Laspeyria flexula* (1). *Scopula imitaria* (1). *Cosymbia punctaria* (17). *Cosymbia albipunctata* (2). *Lomaspilis marginata* (1). *Semiothisa alternaria* (2). *Deuteronomos alniaria* (4). *Plagodis dolabraria* (1, Dr. Riddell).

VI. Marsh species:—*Eilema griseola* (3). *Chilodes maritima* (1, Dr. Riddell). *Amathes sexstrigata* (1). *Arenostola phragmitidis* (3). *Hydraecia oculatea* (1). *Hydraecia paludis* (1, Dr. Riddell). *Hydraecia micacea* (7). *Rhizedra lutosa* (1; Dr. Riddell took several). *Nonagrius typhae* (1).

No doubt some of the above came from the golf course, but it is difficult to believe that they all did. It seems pretty certain that the *N. typhae* came from the brickworks, about three-quarters of a mile away.

VII. Immigrants or reported immigrants:—*Lithosia quadra* (1 ♂, 30th-31st July, and another ♂ 3rd-4th August). *Leucania vitellina* (Dr. Riddell took one 29th-30th September). *Leucania albipuncta* (4). *Laphygma exigua* (1, 4th-5th September). *Caradrina ambigua* (59 in all, 20 on 5th-6th September). *Plusia gamma* (126, 10th-11th September, otherwise in small numbers; the last was taken on 30th-31st October). *Nycterosea obstipata* (1, 5th-6th November). *Nomophila noctuella* (only 9 in all). *Anania nubilalis* (9. This species seems now to be established in S.E. Kent).

VIII. Species which so far as I know had not previously been recorded from the Folkestone-Romney Marsh district:—*Lycophotia varia*

(1, 26th-27th July). *Abrostola triplasia* (2, Dr. Riddell). *Euphyia luc-tuata* (1, 1st-2nd August). *Eupithecia millefoliata* (3. Larvae were found in the district in 1950). *Eulia formosana* (1, 26th-27th July, and another 30th-31st July).

Evidently there are in the town, at any rate under certain conditions, many more individual moths and more species of moths than have been revealed by traditional methods of collecting. If it is true that the effective range of a m.-v. lamp is about 50 yards, it would appear, in a built-up area like this, that all the moths taken in or near the trap had been flying over a space of rather less than an acre. Are these to be regarded as a fair sample of what occurs throughout the town, or do they represent a concentration of moths in a particular small area? On the former supposition one might be inclined to multiply the number taken on one night by some such figure as 1,600 to obtain the totals for the whole town, but such arithmetic would I fear produce misleading and, in respect of the less common species, absurd results. Moths do of course congregate in places where there are natural attractions and there are such places in Folkestone, but these gardens are not among them. One has to assume therefore either that the m.v. lamp has some unknown if not magical power of attraction or else that the moths are passing by on their way to somewhere else.

Of the species listed above for which I have suggested localities at some distance from my house it would be absurd to claim that none could have originated in the parks and gardens of the town. It would be equally absurd to assume that all had. The accumulative evidence is that many had travelled at least a mile from their places of origin. Birch trees in Folkestone are few and far between and oak is almost absent. So it is not unreasonable to suppose that some moths had come from the woods two and a half miles away. The *Lycophotia varia* may even have come from the nearest patch I know of native heather, which is $5\frac{1}{2}$ miles away. Such distances need surprise no one who considers the numbers of moths normally resident in the Weald that have been taken at Dungeness and near Littlestone. Why moths should leave their natural haunts and come to Folkestone is a riddle yet to be solved. Perhaps they are making for a well-lighted area; or perhaps they are suffering from undirected wanderlust.

Notes on *Malacosoma neustria* Linn.

By DAVID WRIGHT

During a stay of five years in the Llyn Peninsula (Caernarvon) I had ample opportunity to collect and observe the Lackey Moth in all its stages. It is one of the commonest moths in the area and I found the larvae in abundance from the seashore to the hilltops on willows, hawthorn, sloe, elm, hazel, alder, apple, plum, pear, bramble and raspberry. On an isolated hawthorn a few yards from the shore I noted five nests of half-grown larvae and a similar number on a stunted hawthorn and two dwarf willows near the top of a hill 1,000 feet above sea-level.

On fruit trees it sometimes became a pest. I regularly sugared my landlady's apple trees, and the appearance of swarms of *neustria* larvae on the same trees one year caused a little tension between us. I ex-

plained that there is no connection between sugar and Lackeys, particularly the larvae, but I don't think she believed me. Her distrust was heightened shortly afterwards when she leaned against a sugared tree, stuck to it, and was stung twice by wasps that were feeding at the patch. The larvae certainly made a disgusting mess of whole branches of the trees and I removed two butterfly-nets full of them to hawthorns some distance away.

It is difficult to say at what stage they are most heavily parasitized. From the hawthorn near the shore mentioned above I took 100 half-grown larvae and exactly half were stung, the rest producing perfect moths.

They are very easy to deal with if taken when half-grown or larger, but I had no luck in rearing them from the eggs in cages. Probably a gregarious life within their web is essential to the young larvae and this web can be usefully constructed only on growing trees or bushes.

Each year I was able to keep one or two nests under observation and found them very interesting to watch. It may be fancy on my part, but I think that some form of sentry-posting operates in these nests of young *neustria*. In sunny weather there are usually as many larvae feeding and resting outside the nest as there are inside, but on cloudy, chilly days I found that all but one, or sometimes two, retired within. These solitary individuals left outside seemed to me to have the job of warning the community inside the nest of any approaching danger. They were always alert and a slight movement or noise nearby agitated them at once and this disturbance was immediately communicated to the rest of the herd. They all became active and a general state of alarm could be seen through the semi-transparent sides of the web.

That they are extremely sensitive as a community can be tested by anyone who happens to find one of these families on the move from an eaten-out site to a new one. Whether the new site is predetermined among the larvae I know not, but they all set off in the same direction along a branch, or two parallel ones, and it was while watching one of these short migrations that I tried a simple experiment. There was a long line of larvae travelling in single file along a thin branch of hawthorn, and to see what would happen if this movement was interrupted I held a twig between two larvae in the middle of the line. Those approaching the obstruction stopped as was to be expected, but the behaviour of those in front of it interested me. The larva immediately in front of my twig went ahead for about an inch and then, evidently aware that he was no longer being followed, stopped. He raised his head, waved it from side to side and turned about, uneasily as I thought, to see what was going on behind. The two larvae that had preceded him along the branch followed suit and something very like a conference took place between the three. Meanwhile I continued to hold back those behind the twig and after a short while the three, evidently deciding that there was nothing to be done about the rest of the family, so strangely prevented from following, resumed their original positions and hastened after the leaders.

I tried this on another occasion with similar results. In both cases there was no doubt in my mind that those larvae already past the

obstruction and physically unaffected by it were just as disturbed as those following.

This community feeling—for want of a better phrase—leaves them after their penultimate moult, when the unsightly web is abandoned and each larva wanders off to complete its growth in solitude. At this time I think they travel considerable distances, because I have found single final-instar larvae far from any webs.

The cocoons were spun up almost anywhere off the ground, most commonly on the undersides of the larger leaves of sloe. My eyes frequently suffered a short, sharp irritation from the bright yellow powder in the cocoons.

The pupa is peculiarly sensitive to sounds. I kept fifty in a ventilated glass-topped wooden box by an open window, and one day, leaning over this box to whistle the dog in, I noticed a movement among the pupae. I whistled again, louder this time, and nearly all the pupae wriggled their 'tails.' I went on with this, making various noises, but a sharp whistle always produced the most violent reaction. A movement nearby, or a tap on the side of the box, had the same effect.

The yellow powder in the cocoon falls out and floats about at the slightest touch, and assuming that its purpose is to be obnoxious to birds it seems likely that this violent wriggling on the part of the pupa is a protective device, disturbing the powder into the air at the approach of a bird.

Variation in the moths was about the same in both sexes, the males having slightly the greater range of colour. The distance between the cross-lines on the forewings varied somewhat.

Although *M. neustria* is undoubtedly a pest in some years in that part of North Wales I got to like it very much and found it a very interesting species to rear and to observe.

Hadena blenna Hübner in England

By AN OLD MOTH-HUNTER.

Now that certain moths seem to be extending their range northwards, both within our island and into our island from the Continent, it is worth while having a look at some of the 'possibles'. Take, for instance, *Hadena blenna* Hüb., formerly known as *peregrina* Treitschke. It is in all our modern books and lists, or most of them, because once upon a time three specimens were caught at sugar in the Isle of Wight. But that was ninety years ago, and not since then, so far as I am aware, has *H. blenna* been recorded from our coasts. Our book-makers have even given it an English name, 'The Stranger', which of course is a translation of Treitschke's Latin specific one.

Yet in spite of this coyness in patronizing our sugar and our latest m.v. lamps I have an idea that *Hadena blenna* may not only occur on our coasts much more frequently than people think but that it may even be an old inhabitant of our island.

The three recorded specimens were all taken at the same place, to wit Freshwater, which seems to me, who am not given to stretching 'the long arm of coincidence' unduly, to indicate that all three had emerged from the pupa at Freshwater. If you are going to suggest that three French *blenna* in three different years alit at an identical

spot in the Isle of Wight after crossing at least sixty miles of sea you and I must agree to differ. Things don't happen like that, not even in books. Had only two specimens been taken in succeeding years so very close together—"within", says Barrett, "a few yards of the same spot"—I should still be chary of suggesting immigration; three specimens in as many years all in the same spot rules out immigration altogether. These three Freshwater *blenna* emerged from the chrysalis at Freshwater, of that I have no doubt at all. They may of course have been liberated at Freshwater, close to the spot where they were found, by some lepidopterist who had brought or obtained them, as eggs, larvae or pupae, from France. That is another matter altogether and in default of any knowledge either *pro* or *con* it is fatuous to express any opinion. *Quot homines, tot sententiae*. You can have it whichever way you like. No one can contradict you.

At all events I think it is possible that *Hadena blenna* may be a British insect—and by 'British' I mean either an autochthon or a successful colonist, not just a visitor. My reasons are these.

In the first place it is a species which, even in its favoured haunts in France, has a low survival density. It is rarely if ever taken by the marauding lepidopterist who chances to visit its haunts, though it is not uncommon with those who know where it exists and how to find it. It is a strictly maritime insect and the larva feeds on salt-loving plants which grow in the mud or sandy mud of seashore, estuary and saltings. Hence larval populations must be largely reduced (as they are in the cases of *Actebia praecox*, *Agrotis ripae*, and other seashore inhabiting species) by gulls and maritime and aquatic birds of various kinds. Plainly the larva does not burrow in the mud by day but relies upon procrypsis for its protection; for it has a bright yellow spiracular line and I know of no lepidopterous larva having a bright yellow spiracular line which burrows in the earth or sand to escape its predators. Nor, reader, do you. The bright yellow lateral stripe plays a very definite part in procrypsis, as of course you have discovered long ago. Hence *blenna* is not a species which one could expect to find in large numbers anywhere.

Secondly the imago is rather an insignificant moth and when only slightly worn can very easily be mistaken for half a dozen common things. On the sugar patch a worn specimen would quite likely—especially by an inexperienced moth-hunter—be passed by as one of its congeners. I think Allan was quite right when he wrote (*Talking of Moths*, 1943, p. 274) "*Peregrina* has always seemed to me to be one of those moths which may repose in cabinets unnoticed . . . it may be that there are more *peregrina* in this country than the pundits think".

Thirdly the foodplant. All the books, the Continental books, which I have consulted aver that *blenna* feeds on *Atriplex* (the maritime species), *Suaeda*, *Glaux*, *Salsola*, *Eryngium*, *Cakile* and all the rest of the usual littoral and halophile foodplants eaten by lepidopterous larvae. Perhaps it does—on occasion. But that excellent entomologist Monsieur G. Durand, in a paper on the saltings species of Western France which he contributed to *Lambillionea* in 1937, asserted that although the books list a number of foodplants for *blenna* he had every reason to believe that so far as western France was concerned the presence of the moth was linked with the presence of *Beta maritima* L.

—Wild Beet. "Even if," says he, "this is not the only foodplant, it is most certainly the one preferred."

Fourthly the habits of the imago. It does not seem to fly very far and, says M. Durand, "is easily overlooked". Perhaps the reason why it is a stay-at-home is that *Beta maritima* is not a widespread plant and grows only in a saline medium. Also *blenna* is very local; even when you have found a habitat of the foodplant it does not by any means follow that the moth will be there also. With all his experience of the right kind of place to search M. Durand remarks "I am far from having found it in *all* the suitable localities wherein I have looked for it". Yet *blenna* occurs all the way along the Bay of Biscay from the Pyrenees to Finisterre. The moth comes to sugar—the three Freshwater specimens were captured by this means—and *may* come to light.

Now a word or two about the foodplant. The older floras rated *Beta* a very common seaside plant in England, inhabiting sea-beaches, muddy shores, and salt-marshes, extending for some distance up estuaries but growing only where it could "partake of the saltiness of the sea". It has a tall succulent stem often two feet high, and its leaves, which are thick, succulent, glossy and waved, are a rich deep green in summer turning to crimson and purple in autumn. The lower leaves are stalked, the upper ones spring from the flowering stem. The flowers are not attractive being small and green, arranged in pairs. The plant is in flower from June to September. According to Bentham & Hooker (revised by Rendle, 1924) *Beta* grows in muddy sands by the seashore in Europe, Western Asia, and Northern Africa, extending northwards to the Baltic. "Not uncommon," they say, "on the British coasts, south of Fife and Argyll."

My own impression is that *Beta* is by no means a generally common plant though one comes across small colonies of it, more often individual plants, here and there; usually, in my limited experience, by the sides of a mudflat. I seem to remember seeing it in the neighbourhood of Falmouth many years ago—was it up the estuary of the river Fal? If it *does* grow there to-day, *that* is the first place I should go to in my search for *blenna*. For *blenna* is a western species, and Falmouth has a mild winter climate not unlike that of the Bay of Biscay. So I should sugar near the foodplant, as near to it as possible, during the first fortnight of June, and again in the last week of August and first week of September. (There are two broods in France; in England perhaps only the second one occurs: the three Freshwater specimens were all taken at the end of August.) I should also try the m.v. lamp—but with a black glass shade; for there is much coming and going of ships at Falmouth. . . .

Now for the larval habits. Here is what M. Durand writes (I take the liberty of translating): "Thanks to the generosity of my colleague M. Dan Lucas, who sent me a small batch of eggs laid by a female caught on the island of Aix, I was able to rear the species from the egg on garden beet. The larvae grew rapidly; they hatched from the egg on 20th August and most of them were full-grown between the 12th and 18th September. Those which I did not 'blow' pupated before the end of that month—about a month after they hatched. Moths emerged at the end of May and in June. Thus there are two broods in Western France, May-June and August-September."

He then goes on to describe the larva, and as he remarks that it is a handsome larva and that the figure in Spuler's book (vol. 4, fig. 9, Nachtrag, pl. 3) is very poor (his words are "imparfaitement reconnaissable") and Barrett says "larva apparently not very fully described", it is as well to translate this also:—"Ground colour yellowish, the tergum covered with a multitude of greenish-black dots which, to the naked eye, appear to be joined. With a lens, however, one can see that they form a fine network of dots and olive lines; in the middle of the reticulations there are whitish-yellow spots. On each somite there are four dots which are blacker and more distinct. Spiracular line bright yellow, surmounted by a blackish line which is clearly darker than the dorsal tint. Round each spiracle there is a spot of bright yellow, often almost orange, and above it, on the darker line, there is a more conspicuous blackish spot. The dorsal line is thin and whitish, more or less broken and of varying distinctness; also, on the last abdominal somite there is a more distinct perpendicular line marking the suranal plate. The abdominal feet are yellowish, as is the whole ventral surface. The head is light brown speckled with darker dots on the vertex."

Does *Beta* grow at Freshwater, near the historic spot where Frederick Bond took the first recorded specimen in 1858? Does it grow on the southern or western seaboard of Ireland? Or on Lundy Island (*blenna* occurs on at least one small island off the Breton coast)? Keep an eye open for it when you go on holiday next summer; for wherever you find *Beta maritima* it may be worth your while to have a look at its leaves for the larval trademark. You never know. . . .

P.S.—Don't forget that in its first two instars you are more likely to find the larva up among the florets on the flowering spike.

Notes on Microlepidoptera

By H. C. HUGGINS.

The female of *Dioryctria hostilis* Steph. lays eggs readily if enclosed in a glass-lidded metal box with fresh aspen leaves. I gave a worn, damaged one I took at Ham Street in June to my late friend, W. S. Gilles, and she laid a few eggs almost immediately (she died a day later) from which he reared half a dozen moths by sleeving on aspen.

Dioryctria abietella Fabr. is very fond of sitting on fir trees which have been killed by fire two or three years previously. It is almost impossible to see the grey barred moth on these charred silvery trunks. It flies off readily if the trunk be smartly tapped and comes to the ground in a series of wild zigzags, usually settling a dozen yards off. It is rather difficult either to net or mark down, and a partnership in which one collector taps and the other stands well back with the net is very productive. On one occasion, however, I did succeed in netting over a dozen in one morning off burnt pines at Matley Gap in the New Forest, but *abietella* was very common that day, and I only succeeded in catching about one in three. The moth is on the wing from late May until mid-July, but I have found it at its best in mid-June.

The larva of *Nephoterix obductella* F.-R. may be found on marjoram in mid-June. It bites through the main stem and spins the dying central leaves into a conspicuous black mass, in which it lives in a tube

by day, emerging to feed on living leaves at night. It is greyish black in colour with lighter longitudinal striations, and feeds up readily in a flower-pot, leaving its tube when full-fed to pupate in a small tight cocoon in moss. It is curious how this insect has spread in this country. When I found it in some numbers in the Margate area in 1928 there were only two undoubted British specimens known, though Mr. H. W. Daltry had taken two others the year before near Deal which had not then been recorded, and its life-history here was not known till I worked it out the following year. Since then it has turned up all over Kent and in other parts of South-East England. I cannot understand why it failed to make a settlement earlier, as it can stand great extremes of cold, and Purdey had taken it in East Kent many years before.

The larva of *Crambus paludellus* Hubn. should be collected in early June when it is full-fed. It inhabits the previous year's stems of *Typha*, preferably *latifolia*. These are usually by this time reduced to thick stumps, which should be cut through below the surface of the water. It is frequently common where it occurs at all and several may be found in one stump. When I was collecting the larva a few years ago to send to Dr. Beirne to be figured I found no less than six in one thick stump of *T. latifolia*. *Paludellus* seems at its best in the Norfolk Broads, where it has a very wide range of variation. Out of roughly 40 taken at Barton I have had a range from silvery white to dull leaden, but near here, where in the course of a few years I have seen literally hundreds, it only appears in a few shades of grey, and specimens from Sussex shown me by Mr. L. T. Ford were of a similar dull tinge.

Further Notes on Microlepidoptera from Lancashire and Cheshire, 1951

By H. N. MICHAELIS.

A few new records have been received since my notes in the January number of the present volume (page 12). The winter months have given time to examine material collected earlier and have produced some confirmations of old records:

Eurhodope advenella Zinck. Another specimen has been found at Bromborough, Cheshire, by Mr. Snell in 1951.

Donacaula mucronella Schiff. Two specimens were taken at Delamere on 21/22.vii.51 by Mr. Snell. Our only other record was from Wirral in 1926.

Phlyctaenia crocealis Hubn. Always a local insect in Cheshire. A few larvae were found on *Inula* at Wilmslow in late June 1951.

Crambus latistrius Haw. Though fairly common in the sandhill areas in both counties this species was taken at an inland locality at Whitegate near Delamere, Cheshire, in 1951 by Mr. H. L. Burrows.

Phalonia cnicana Doubl. Not often recorded from Cheshire, this moth was found in numbers at Burton on 14.vii.51. It was flying low among mixed herbage, often settling on nettle and thistle, about 21:30 hours, B.S.T., on a warm sunny evening.

Cochylis baumanniana Schiff. Recorded prior to 1890 from North Lancashire, Mr. H. W. Wilson found this pretty moth in some numbers at Formby on 1.vi.51.

Evetria turionana Hubn. Not previously recorded from Lancashire, a single specimen was beaten from pine at Formby on 11.vi.51.

Ancylis siculana Hubn. Considered a local species in Cheshire, a number have been taken among *Rhamnus frangula* at Wilmslow in late May and early June 1949/51.

Metzneria metzneriella Staint. and *Aristotelia stipella* Hubn. The former was recorded for the first time for Cheshire when two specimens were taken at Gatley in July 1949. A large number of seed-heads of *Centaurea nigra* were gathered in early November 1950 and kept in a box out of doors. Large numbers of moths were bred in July 1951, while a search on the ground produced one specimen on 16.vii.51. *Aristotelia stipella* Hubn. is considered scarce in Lancashire and except for a single specimen at Didsbury on 26.iv.51 I can find no published record since 1890. In September and early October 1951 the red-lined, pale yellow larvae were plentiful mining the leaves of *Chenopodium* in the Didsbury district. The moths are emerging at present (April-May), usually between 1700-2000 hours., b.s.t., though three have been seen drying their wings about 0830 hours. Here we have two instances of insects regarded as locally scarce in the field owing to their secretive habits, when search for their earlier stages has proved both species to be, at least, locally common.

Telphusa triparella Zell. Not recorded for Cheshire until 1945 when Major A. W. Boyd found the moth at Arley, I feel this insect has been overlooked as it has since been found in several parts of the county. On 31.vi.47 I took several flying among sweet gale (*Myrica*) in the evening at Delamere. Associating the moth with *Myrica* I did not recognize the species and sent them to Mr. Mansbridge for identification. The matter was allowed to rest as the accepted food, oak, was present, though I still thought my specimens were linked with *Myrica*. In early September 1950 Mr. B. Snell and I took a large number of larvae in spun shoots of *Myrica* on a moor above Loch Ness. Many were *Antithesia dimidiana* Sodof., but a large number made a skeleton of the top shoots and in May 1951 many *Telphusa triparella* Zell. emerged. From these the Rev. D. P. Murray kindly made a mount and a drawing of the genitalia, which agreed with the plate in Pierce and Metcalfe's work. In September 1952 similar spun shoots were seen at Delamere and have recently produced the moth. I cannot find *Myrica* given as a food in any book in my possession.

Gelechia rhombella Schiff. A specimen was taken by Mr. Snell in his garden at Bromborough on 19.vii.47 which, no doubt, fed on apple in his orchard. This is a new record for Cheshire.

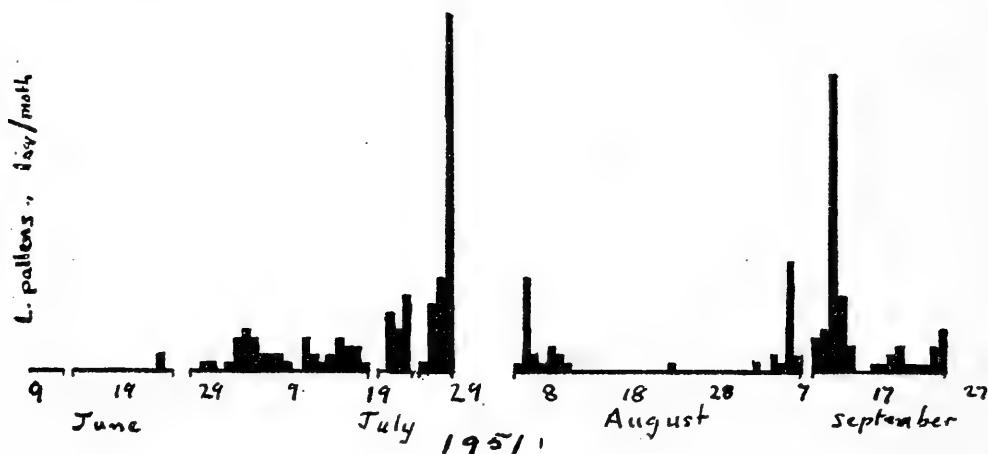
Coleophora annulatella Tengst. A specimen was taken at Didsbury near Manchester in the same field which produced *Aristotelia stipella* Hubn. In April 1952 a larval case which approximates to the description of *C. annulatella* Tengst. was found among *Chenopodium* gathered last year. The larva wanders over the seeds and dead leaves but shows no signs of feeding.

Notes and Observations

EARLY APPEARANCES OF *GYMNOSCELIS PUMILATA* HÜB.—Mr. Byers's note on the capture of this insect in February is interesting as it rarely

appears before late March or early April. One was taken in Folkestone on 13th February 1948 and, what is more surprising, one at Roehampton on 4th January 1928. In the latter year I took two in France, at Pau, on 16th and 17th February. No doubt, like some other early species, it is ready to emerge from the pupa after a very short spell of warmer weather.—A. M. MORLEY, 9 Radnor Park West, Folkestone. 12.iii.52.

IS *LEUCANIA PALLENS* L. DOUBLE BROODED IN BRITAIN?—After reading Mr. Lees article in the April number (pages 101-104) I feel I can help a little. I was working a mercury vapour light-trap from 20th May until 24th September last year. The accompanying graph shows the numbers of *L. pallens* taken on each night. Each moth was marked before release, but it was found that no moths returned. The breaks in the base line of the graph indicate that there was no operating on that night.



I see no reason why eggs laid by the early July imagines should not give rise to the September group. There is such a marked gap between the two groups that it would seem unlikely that they are progeny of late moths of the previous year.—J. COLIN HARTLEY, The Poplars, Fulbourn, Cambs. 15.iv.52.

LEUCANIA VITELLINA HÜBN. BREEDING IN ENGLAND.—With reference to the question of *Leucania vitellina* breeding in this country (*Ent. Rec.*, 64: 103) I have looked up my diary for 1933, where, on the 26th and 27th of August, I have entered that a friend and I took thirty-one *vitellina* at sugar in a small bay behind a stretch of sandhills on the North coast of Cornwall. We commented on the freshness and perfect condition of every specimen—to which their present appearance in the cabinet bears witness—and on the morning following capture we noticed that more than one had deposited some cream-coloured meconium on the glass of their pill boxes.—E. BARTON WHITE, St. Merryn, Braunton, N. Devon. 10.v.52.

IMMIGRATION OF *VANESSA CARDUI* IN DORSET.—A second influx of *V. cardui* is here. It is on a much smaller scale than the first and those imagines that I have seen at close quarters have been a little larger

and more orange in hue than the March immigrants. Descendants of the first influx (which I am rearing in captivity as a control) are only just in the third larval skin. The imagines which have just arrived here must therefore have emanated from a race whose life cycle is "out of phase" with the life cycle of the early migrants. Alternatively, the present imagines may have secured some "phase advance" by breeding at an intermediate point and in a correspondingly warmer climate.—V. W. PHILPOTT, 67 Mount Pleasant Avenue, Radipole, Weymouth, Dorset. 1.v.52.

FIRST APPEARANCES IN 1952.—For lepidopterists, first appearances whether early or late in any year are always of some interest and the following is a list of species and their respective dates that have come to my m.v. light-trap at Arkley, S. Herts. This year the trap has been in use every suitable evening since mid-March, and the observations so far tend to show the general forwardness of the season.

22nd March: *Euphila badiata* Schiff.; 23rd: *Orthosia advena* Schiff.; 12th April: *Cyenia mendica* Cl., *Xylocampa areola* Esp., *Lycia hirtaria* Cl.; 17th: *Polyplocia ridens* Fab.; 19th: *Panolis flammea* Schiff.; 26th: *Drymonia ruficornis* Hufn., *Hemerophila abruptaria* Thun.; 28th: *Notodonta dromedarius* L., *Gonodontis bidentata* Cl.; 30th: *Pheosia tremula* Cl., *Notodonta ziczac* L., *Cilix glaucata* Scop., *Apatele runcicis* L., *Ochropleura plecta* L.; 1st May: *Lophopteryx capucina* L., *Drepana lacertinaria* L., *Agrotis puta* Hub.; 3rd: *Laothoe populi* L.; 5th: *Clostera curtula* L.; 6th: *Mimas tiliae* L.; 7th: *Drepana falcataria* L.; 8th: *Plusia gamma* L.; 12th: *Agrotis exclamationis* L., *Abrostola triplasia* L.—T. G. HOWARTH, British Museum (Natural History), S. Kensington, London.

EARLY EMERGENCES IN 1952.—The following species taken locally this year appear to be rather earlier than usual. *Drepana falcataria* L. and *D. lacertinaria* L. on 19th April. *Apatele psi* L. on 1st May. *Diataraxia oleracea* L. and *Abrostola tripartita* Hufn. on 2nd May.—W. E. MINNION, 40 Cannonbury Avenue, Pinner, Middx. 6.v.52.

A NOTE ON *XYLOCAMPA AREOLA* ESP. AB. ROSEA TUTT.—Last year I bred from eggs a large brood of this species and in March-April of this year, when the moths appeared, I was surprised to note that nearly all of them are tinted with pink, particularly the males which are paler. Tutt called this form "var. *rosea*." It is said to be the predominant form in Gloucestershire. The colour is most noticeable when the insects first emerge and tends to deteriorate after a few days. Tutt also said that many other species of "this peculiar ashy ground-colour" exhibit this pink tendency, and quoted *A. tridens* Schf. and *A. glareosa* Esp. I have never bred the latter, but I have bred a large number of the former and saw no signs of pink in any of them. It would be interesting to learn of the experiences of others on this point. Perhaps it would help to determine whether this pink form is local and, therefore, an inherited factor.—J. NEWTON, 11 Oxleaze Close, Tetbury, Glos. 11.v.52.

[The only *A. tridens* I bred from S. Devon was tinted with pink, but of more than 200 bred from E. Anglia none was pink. Pink *A. glareosa* are commoner in some places than in others, and in my experience are never found in E. Aberdeenshire. Mr. Newton is probably right in thinking that they are genetic.—ED.]

NOLA ALBULA SCHIFF. IN DORSET.—I was interested to see the Note from the Reverend F. M. B. Carr (*Ent. Record.*, 64: 113) regarding the occurrence of *Nola albula* Schiff. in Dorset. Last summer this moth came commonly to the lighted windows of a bungalow between Wareham and Swanage, where I was staying during the last fortnight of July.—J. ANTONY THOMPSON, Milton Lodge School, Wells, Somerset. 9.v.52.

DISCLOSURES MADE BY THE M.V. LAMP.—Anyone using a m.v. light for the first time must be impressed by the numbers of examples of supposedly uncommon species which turn up. To quote two instances:—By 'orthodox' methods of collecting I have found about ten specimens of *Biston strataria* Hufn. in about six years. A m.v. lamp in the same locality produced over 100 in two hours. *Drymonia ruficornis* Hufn. I had never found until using the m.v. when 36 arrived on the first night and many more subsequently.

This prompts the question, "Where have these moths been previously?" I do not imagine the cases cited to be due to sudden increases in numbers. Is it that the bulk of our moths fly too high, say tree-top level, where the paraffin lamp would not affect them and that they have therefore remained almost unnoticed until the advent of m.v.?—W. E. MINNION, 40 Cannonbury Avenue, Pinner, Middx. 6.v.52.

A NOTE ON HYMENIA RECURVALIS FAB.—I have had very considerable experience of this insect both in India and in East Africa, where it is a common species, and my observations lead me to disagree with one of the remarks quoted by Dr. Cockayne in his paper at page 71 of the March issue, namely, that it is rarely attracted by lights. On the contrary, both in India and East Africa I have found it to be one of the commonest Pyrales coming to ordinary electric light, and on one occasion when passing through the Suez Canal at night it swarmed at the deck lights of my ship.

I am inclined to agree that this species is unlikely to establish itself as a pest in Britain. I very much doubt its ability to stand temperatures much below 60° F. Here in Kampala, at 3,500 feet, it is continuously brooded, and I have records of its occurrence in Calcutta in every month of the year.—D. G. SEVASTOPULO, Kampala, Uganda. 30.iv.52.

THE LARVA OF HESPERIA COMMATA LINN.—Have any of our readers come across the larva of *Hesperia comma* L. in its native haunts? Many years ago I determined to find this larva in its natural habitat and in August 1925 noted where the butterfly was commonest, the ground nearly level, and the turf very short. It was at the top of the Sheep Leas, Horsley. On 27th June 1926 I went with the late Mr. Worsley Wood taking with me a square piece of thick mackintosh to kneel on. Moving foot by foot, kneeling or lying down, and almost every time I moved putting my hand or leg on a plant of thistle, *Carduus acaulis*, I separated the tufts of sheep's fescue grass, *Festuca ovina*. Mr. Wood did the same thing, but after a short time he gave up and sat smoking his pipe and making caustic remarks. Fairly soon I found a tent-like house between two tufts of grass, the floor bare ground and the walls and roof formed of the fine hair like blades held

together by strands of silk. On the floor was a cast skin. Eventually after five hours searching I found about two dozen houses, all very similar, some with a little moss on the floor and sides, others with the floor of bare earth and the sides grass only. Most of them were untenanted, some had a cast skin at the bottom, and four contained a larva of *H. comma*. One of these was in its last instar, two were about to change skin for the last time, and one was in the penultimate instar. The larvae were brown, not so black as Frohawk's picture, and their heads were black. I could find nothing to indicate the presence of a house and all were found by patiently separating tuft after tuft of grass. With an aching back, pricked all over my hands, wrists, and legs, and very thirsty I felt I had earned my tea.

I dug up a piece of turf and potted it at home, and placed it in a large glass bell jar. I often looked at it, but never saw a larva exposed by day and only once at night. They became full grown between 7th and 13th July.—E. A. COCKAYNE, 8 High Street, Tring.

PARASEMIA PLANTAGINIS L. AT SWANAGE.—Walking on the Purbecks last week I came across a large concentration of *P. plantaginis* larvae. There were thousands of them in the space of about half a mile by two hundred yards; it was not possible to tread without squashing some. I collected a quantity and let them loose on the Downs near my cottage, in the hope that the species may establish itself there.

There are still many *Vanessa cardui* and *V. atalanta* about, although somewhat worn. *Pararge aegeria* and *Euchloe cardamines* are very plentiful.—LEONARD TATCHELL, Swanage, Dorset. 2.v.52.

PARADICHLORBENZINE AND MOULD.—In a note at page 55 of the February number (*Ent. Rec.*, 64: 55) Mr. P. B. M. Allan asks whether the addition of a small quantity of P.D.B. to a box "filled, from cork to glass" with mould could have caused the latter to completely disappear.

It has been my misfortune for the last thirty years to have had to contend continually with mould and insect parasites in collections I have had under my care, both private and public. In this country (Argentina) we have not yet reached that stage where our museums are air- and temperature-conditioned, and for the most part the collections are housed in standard Deyrolle boxes which do not afford the same protection as cabinets.

Over this period I have found that given equal conditions, boxes in which there is P.D.B. are more susceptible to mould than those without this product. This has been confirmed by our mycologists, who about a year ago consulted me on this subject, complaining that they were being troubled by mould in those cardboard boxes in which they had placed P.D.B. as a deterrent to parasitic insects.

On the other hand I have never found mould in boxes in which a small quantity of *flake* naphthalene has been placed, and in those cases where mould-infected insects have been cleaned, no matter how intense the attack, and then placed in boxes with flake naphthalene, there has been no recurrence of the mould, even though the original boxes have been re-employed. Unfortunately, naphthalene does not normally kill insect parasites so a certain amount of P.D.B. must essentially be employed from time to time.

The moulds that attack stored insects are mostly species of *Aspergillaceae*, though at times species of other families or even Orders are involved.

It would have been interesting to have known what species was concerned in the case of Mr. Allan's hairstreaks or the containing box, since it might have been possible by experiment to decide whether this species was susceptible to the emanations of P.D.B. As to the total disappearance of the dead growth, for Mr. Allan's note seems to indicate that no signs of any mould remained in his box, that is something for which I can offer no explanation.—KENNETH J. HAYWARD, Institute of Entomology, Tucumán University, Argentina.

WHITE AND PALE FORMS OF *LYCAENA PHLAEAS* L.—I am concerned at the Editorial footnote to my paper in the May issue of the *Record*. The second sentence of this footnote seems to be quite incorrect, possibly through a misunderstanding. The sentence says that the names *dextroalba*, etc., are "quite unrelated to *schmidtii* = *alba* Tutt" but they are in fact directly related to *alba* Tutt. *alba* Tutt was described by him on p. 355 of *Brit. Lep.*, vol. 8. A single long paragraph follows his description, from p. 356 to almost the end of p. 357. Just over half-way down he describes the following forms:—*dextroalba*, *anteroalba*, *posteroalba*. Thus they are aberrations described by Tutt and must be connected directly with his main ab. *alba*. He follows up by next describing another one linked with *alba*, namely *albicaudata* and then goes on to other pale forms.

The other authors I have quoted have also clearly used ab. *alba* as the basic form to describe their abs. which are of partial whiteness. I quoted the authors' names of those six abs. specially to make that point clear.

It occurs to me that a misunderstanding has arisen and that it was assumed that *dextroalba*, etc., were some of Leeds's names; if they were, then I would agree they would have no very special connection. But they are not Leeds's names, because I have given his names (*antilacticolor*, *lacticolor*) below. Thus the second sentence is not correct and will be most confusing to everyone.—P. SIVITER SMITH.

[The second sentence is quite correct. The partially white *phlaeas* are pathological and in no way related to ab. *schmidtii* = *alba* Tutt, which is probably genetic. Tutt linked them together wrongly because they were partly white and *alba* was completely white.—ED.]

METHODS OF SETTING LEPIDOPTERA.—In an Editorial Note to Mr. Siviter Smith's comment on time taken in setting (*Ent. Rec.*, 64: 56) it is stated that setting on blocks using silk or cotton wound round is much the quicker method than using boards and transparent strips. This note surprised me as in my ignorance I thought the cotton method had died out years ago and I wondered if the note might be a bait to arouse controversy over setting methods.

It would perhaps be interesting to know how many blocks are a sufficient stock if one uses this method, how they are stored and also the exact procedure employed. How do loosely scaled insects such as *Deileptenia ribeata* Cl. and *Ellopiia fasciaria* L. react to such treatment, as it is difficult to avoid marking these insects using the board and strip method?

Setting styles and methods are a matter of personal preference though certain conventions have become general. Whenever I see a series of insects taken and set by different workers I always wish that our practice was more uniform. Pins at varying angles and of different lengths, insects at odd heights on the pins, wings flat or sloping, forewings set at different angles, etc., make such series untidy and while the insects themselves are the important item uniform treatment improves the appearance of a cabinet drawer immensely.

My own preference is for vertical pins, the insect fairly high so that the label is readable and wings horizontal with the inner margins of the forewings at right angles to the body. The fore legs are extended at least in the larger moths, but I wonder why we do this especially as in the case of the smaller insects or some obstinate ones the process can use up a lot of time and patience and if one leg is accidentally removed, a not uncommon occurrence, the resulting appearance of the specimen is very unsatisfactory.—W. E. MINNION, 40 Cannonbury Avenue, Pin-ner, Middx. 6.v.52.

[We hope to print an article on this subject in our next issue.—ED.]

Collecting Notes

SELENIA BILUNARIA ESP. AB. NIGRATA GORDON SMITH.—On 12th April one moth of this dark chocolate aberration, which has no white markings, was attracted to my light near Gainsborough, Lincs. Several other specimens which were also taken were much darker than the type.—R. PRICHARD, Woodcroft Lane, Bebington, Cheshire. 25.iv.52.

NOTES FROM WEST KENT.—I have been unable to do much collecting even on my own fallows: they have been wet on so many evenings and very little came off when I did shake them. The only insect that flew in, in quantity and then only a few, was *Selenia bilunaria*, and it occurred to me to wonder if possibly they are getting darker down south. Other opinions on this might be of interest. I took one specimen of *Orthosia gothica* with a well marked pale narrow band inside the outer margin of the fore wings, never seen by me before, except that it is just traceable on one other specimen in my series.. At the S.E.U.S.S. Congress at Eastbourne on 24-28 April, admittedly rather early, few insects were seen, but *Pararge aegeria* was on the wing at Chailey on 27th April.—G. V. BULL, White Gables, Sandhurst, Kent. 5.v.52.

LIGHT-TRAP RECORDS IN SOMERSET, JANUARY TO APRIL.—*January*.—The weather throughout was about average, both for rainfall and temperature. *Operophtera brumata* continued until 6th, and a solitary *Exapate congelatella* came along on 5th. *Depressaria ciliella* on 6th and 15th, but *D. purpurea* and *Theria rupicaprararia* were very common from 5th onwards.

February.—The month was about average for temperature, but was decidedly dry with rainfall only 37% of the normal. *T. rupicaprararia* continued until 19th. One specimen only of the usually common *Depressaria applana* on 6th. *Phigalia pilosaria*, *Erannis progemmaria*, *Ornoides hexadactyla* and *Alsophila aescularia* were first taken on 16th, 17th, 19th and 20th respectively and were subsequently common.

March.—In spite of the cold snap of the last few days the temperature was much above the normal, whilst the rainfall was slightly above. With the exception of *D. applana*, the February moths continued well into mid-March; the *Orthosias* were much commoner than usual, especially *gothica*, *gracilis*, *incerta*, *cruda*, and *stabilis*. *Xylocampa areola* was very common after 14th, and included some beautiful rosy forms. *Calostigia multistrigaria* and *Biston strataria* were first seen on 16th, but numbers have been below average. *Earophila badiata*, *Selenia bilunaria*, and *Diurnea jagella* abundant after 18th. *Gymnoscelis pumilata* on 21st completes the list of moths for the month. Early butterflies seen—*Aglais urticae* and *Gonepteryx rhamni* (8th), *Nymphalis io* (11th), and *Vanessa cardui* (24th).

April.—Both rainfall and temperature about average, but there was far too much wind for the time of year. *Depressaria yeatiana* came as a straggler on 1st; *Depressaria zephyrella* and *Peronea hastiana* on 3rd. Fortunately the best nights of the month were the Saturdays, 12th and 26th. On 12th the 'bag' included *Hemerophila abruptaria* (abundant since), *Colocasia coryli*, *Orthosia munda*, *Dasyampa rubiginea*, *Cerastis rubricosa*, *Eupithecia satyrata*, *Ectropis punctulata* and the immigrant *Nomophila noctuella* (my earliest record for this species).

Phlogophora meticulosa (16th), *Lycia hirtaria* (19th), and *Trichopteryx carpinata* (17th) were late. A single specimen of the usually abundant *Depressaria arenella* on 18th—the only one seen this year. *Xanthorhoe spadicearia* (20th) and *Opisthograptis luteolata* (25th) were about average, but *Abrostola tripartita* on 27th is remarkably early date.

The second good Saturday (26th) produced the first specimens of the following:—*Drymonia ruficornis*, *Cerura vinula*, *Pheosia tremula*, *Notodonta ziczac*, *Graptolitha ornitopus*, *Polyphoca ridens* (the first I have taken here), *Conistra vaccinii*, *Xylomyges conspicillaris*, *Chloroclystis rectangulata*, *Eupithecia castigata* and *Ligdia adustata*. A male *Cyenia mendica* on 28th, and on 30th the first capture in the trap of *Cucullia verbasci*, plus one *Epirrhoe alternata*.

The first dates for the Spring butterflies are:—*Pararge aegeria* and *Pieris brassicae* (16th), *Euchloe cardamines* and *Uelastrina argiolus* (18th), *Pieris rapae* (19th), and *P. napi* (25th).

Of the other Orders, only the Trichopteron *Stenophylax permistus* and *Limnephilus auricula* have appeared, but both species have been very common, the first dates being 26th March and 18th April respectively.—A. H. TURNER, Bickenhall Somerset. 5.v.52.

DIPTERA

LEOPOLDIUS SIGNATUS WIED. (CONOPIDAE) NEAR BRISTOL (GLOS.).—On 30th September 1951 a male and three females of this apparently rare Conopid were taken at Henbury, near Bristol (Glos.). The species was seen in some numbers sitting on bramble leaves, in the characteristic *Conops* attitude with wings well extended, immediately below a quantity of ivy blossom, but due to their being mistaken for the common *Conops quadrifasciata* Deg., to which species they bear a very remarkable resemblance, only four specimens were taken. Unfortunately a chance to revisit the same spot came only after the weather had turned much colder and no specimens of *Leopoldius* were seen on this occasion.

From a preliminary examination it was thought that these four specimens were all males and therefore represented two distinct species, but Mr. J. E. Collin, who very kindly examined them, identified them as belonging to the two sexes of *signatus*. The ventral process, or theka, generally present on the fifth sternite in females of this family, is quite inconspicuous in the case of the female of *I. signatus*, so that it is not easy to decide to which sex a specimen of this species may belong without a knowledge of other structural differences in the two sexes. A good sexual character will be found in the structure of the tarsi; in the male the tarsi are almost as long as the corresponding tibiae and the tarsal segments are very clearly separated from one another; in the case of the female, on the other hand, the tarsal segments which are rather broader appear to be 'crowded' together so that the separation between them is not easily visible, and the tarsi are only about two-thirds the length of tibiae.

Although all the specimens seen were resting not far from the ivy, none was observed actually to visit the flowers. Ivy blossom appears, however, to have a certain attraction for the species as evidenced by the record of capture of *signatus* on these flowers in Hertfordshire at end of September (see Colyer and Hammond, *Flies of the British Isles*, p. 179). Existing records appear to show that where this species occurs it is usually confined to a very restricted area. Wainwright's records (*Ent. mon. Mag.*, **71**: pp. 179-181, 1935, and **74**: pp. 85-89, 1938) from a single locality on Abberley Hill (Worcs.), in 1933 and in each of the subsequent four years, suggest that here was a well established colony of the species which had not strayed from its habitat for at least five years. It is hoped that the Henbury specimens may prove to be members of a similar colony.—E. C. M. D'ASSIS-FONSECA, 18 Grange Park, Henleaze, Bristol.

COLEOPTERA

RECORDS OF STAPHYLINUS SPP.—Mr. Allen's records of these species (*Ent. Rec.*, **64**: 126) in the southern counties induce me to send a few notes on these insects from Cumberland by way of comparison.

Staphylinus pubescens Deg. Generally common in spring and early summer. On one occasion I saw a large number sitting on heaps of dry horse droppings in a pasture field, the colour of the beetles remarkably similar to the dung, making them difficult to detect until they moved.

S. stercorarius Ol. Uncommon in Cumberland but widely distributed. On the coast sandhills I have taken it several times in rabbit burrows among the rodents' excrement.

S. parammentosus Stein. Apparently rare, taken on one occasion only. This was a specimen on the wing on the outskirts of Carlisle one sunny day in August 1931.

S. erythropterus L. Taken in numerous places in the county under stones in grassy places, at tree roots, and frequently running on roads.

S. fulvipes Scop. Another rarity, one specimen among wood ants near Keswick many years ago.

S. (Ocytus) olens Müll. Generally common in gardens, often to be seen running on roads and paths with tail erect.

S. (O.) similis F. Not very frequent near Carlisle in decayed garden rubbish.

S. (O.) fuscatus Grev. Uncommon, several near Carlisle over a long period of years, always under stones, one high up in the Pennines and another on the coast at Silloth.

S. (O.) globulifer Fourc. Fairly common in decaying vegetation in gardens near Carlisle and on the coast.

S. (O.) aeneocephalus Deg. Common under stones, in flood refuse, and heaps of cut grass.

S. (O.) brunnipes F. Of frequent occurrence in moss, heaps of hedge clippings, and under haystacks.—F. H. DAY. Blackwell Lodge West, Carlisle. 20.iv.52.

Fifty Years Ago

(From *The Entomologist's Record* of 1902)

DISTRIBUTION OF *HEMARIS FUCIFORMIS* AND *H. TITYUS*.—Possibly the continuous change in the synonymy of these species has had something to do with the doubt attaching to some of the recorded localities for these insects. First as to *H. fuciformis* (the honeysuckle species), Meyrick says, "Britain to Sutherland, rather common." This in my experience is nonsense, possibly Mr. Meyrick will answer that this opinion is simply due to my ignorance, which is probably the correct explanation of my present position. The only Scotch records I can unearth, however, are the following: Dumfries (Lennon), Renfrew, very rare (*Paisley Nat. Hist. Soc. Record Book*), Roxburgh, Hawick dist., rare—Goldielands (Guthrie), and I suspect not one of these records refers to our *fuciformis*. There are two records from Cumberland—Orton, Salkeld, common (Wilkinson); and one from Cheshire—Bidston, scarce (Brockholes). Do these refer to *fuciformis*? Otherwise Yorks, Lincoln, Northampton, Notts, Leicester and Warwick form the northern boundaries of this species in the British Islands; which appears also to be unrecorded from Ireland. Second, as to *H. tityus* (the scabious species), Meyrick says, "Britain to the Clyde, Aberdeen, Ireland, rather common." We have records, not only from Aberdeen, but from Argyle, Nairn, Perth, Stirling, as well as Wigton, Roxburgh and Renfrew. Strangely, only three Welsh counties, Glamorgan, Merioneth and Montgomery, give us records, yet one suspects that it is widely distributed there. There are now so many excellent lepidopterists in Scotland that one ought to have little difficulty in getting the necessary evidence as to the occurrence of *H. fuciformis* in the recorded localities, whilst the north of England lepidopterists should be able at once to say whether Cheshire and Cumberland do really produce, or have produced, *H. fuciformis*.—J. W. TUTT.

Current Literature

TRANS. HERTS. NAT. HIST. SOC. AND FIELD CLUB, 23: 230: Report on Lepidoptera Observed in Hertfordshire in 1948 and 1949, by P. J. Bell. This is a summary of observations on Hertfordshire Lepidoptera compiled from notes sent in by ten observers during the years stated. Three new species were added to the county list: *Agrotis vestigialis* (1948), *Euglyia rubidata* (1948) and *Raphia frater* (1949). The latter is a Noctuid new to Britain.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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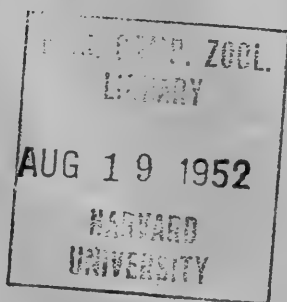
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THE
ENTOMOLOGIST'S
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AND JOURNAL OF VARIATION

EDITED BY

E. A. COCKAYNE

M.A., D.M., F.R.C.P., F.R.E.S.



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BRITISH PYRALID and PLUME MOTHS

by

BRYAN P. BEIRNE

M.A., M.Sc., M.R.I.A., F.R.E.S., F.L.S., F.Z.S.

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Aberrations of British Macrolepidoptera

By E. A. COCKAYNE, D.M., F.R.C.P.

PLATE VIII.

[The aberrations described and named in this paper are in the Rothschild-Cockayne-Kettlewell collection in the British Museum.]

AGROTIDAE.

Agrotis segetum Schiffermüller ab. **paradoxa** ab. nov. (Fig. 1).

In well marked specimens of *segetum* there are two narrow dark parallel transverse lines external to the basal area and two others internal to the claviform. In this aberration the area between the outer line of the first pair and the inner line of the second pair is darkened; there is also an indistinct transverse line just external to the post-median and the area between this and the margin is also darkened. There is a strong contrast between the pale median area and these two dark areas.

Type ♂: Loc. incog. (F. Bond coll.) R. Adkin coll.

Agrotis segetum Schiffermüller ab. **bilineata** ab. nov.

The antemedian and postmedian lines are very well marked; there are no other markings except the reniform, the faintly outlined orbicular, dark dots on the costa, and two incomplete lines at the base. The ground colour is pale.

Type ♂: Loc. incog. F. J. Hanbury coll. B.M., 1938, 683.

The specimen is figured by Barrett, Pl. 125, fig. 1b, but the ground colour is rather too dark, the orbicular too distinct, and the claviform too long.

Agrotis segetum Schiffermüller ab. **seminigra** ab. nov. (Fig. 2).

The whole of the forewing from the base to the outer border of the reniform is heavily suffused with black and the costa as far out as the subterminal line is blackish; the rest of the wing is pale and normal. The thorax is pale.

Type ♂: Felixstowe, vii.1901, A. E. Gibbs. Rothschild coll.

Agrotis segetum Schiffermüller ab. **mediocuneata** ab. nov. (Fig. 3).

Forewing—ground colour pale; reniform and orbicular pale filled in the centre with blackish brown; there is a streak of blackish brown running from the antemedian line to the orbicular, broadening and filling the space between the orbicular and reniform, and continuing as a still broader stripe to the postmedian line forming a roughly pear-shaped dark area in which the stigmata stand out conspicuously; there is also a narrow blackish band along the termen; the rest of the wing from the base to the postmedian is faintly irrorated, the transverse lines indistinct and the area outside the postmedian is almost clear.

Type ♀: Sandown, Isle of Wight, 3.x.1907, J. Taylor. Bankes coll.

Agrotis segetum Schiffermüller ab. **semiconfluens** ab. nov.

The reniform and orbicular are united by a narrow isthmus.

Type ♂: Tring, Herts., bred 21.vi.1939 by A. L. Goodson. Cockayne coll.

Paratype ♂: Rannoch, vi.1906, L. G. Esson. (Gibbs coll.) Rothschild coll.

Agrotis segetum Schiffermüller ab. **marginata** ab. nov. (Fig. 4).

The ground colour of the forewing is blackish brown as far as the subterminal line, from this to the termen it is pale with a row of marginal interneural black dots and a faint shading outside the subterminal line.

Type ♀ : Gullane, 1907, W. Renton. (Massey coll.) Cockayne coll.

Agrotis vestigialis Hufnagel ab. **semiconfluens** ab. nov.

There is a narrow union between the orbicular and reniform.

Type ♂ : Felixstowe, vii.1901, A. E. Gibbs. Rothschild coll.

Allotype ♀ : Camber, Sussex, 13.viii.1938, G. V. Bull. Cockayne coll.

Agrotis vestigialis Hufnagel ab. **virgata** ab. nov. (Fig. 5).

The whole of the forewing between the antemedian and postmedian lines is filled in with blackish brown to form a broad median band, in which the pale orbicular and the pale outline of the reniform stand out conspicuously; there is no white along the median nervure.

Type ♀ : Porthcawl, 2.ix.1911, H.W. (H. T. G. Watkins coll.) B.M., 1926, 209.

EXPLANATION OF PLATE VIII.

- Fig. 1. *Agrotis segetum* ab. *paradoxa*. ♂. Type
 Fig. 2. *Agrotis segetum* ab. *seminigra*. ♂. Type
 Fig. 3. *Agrotis segetum* ab. *mediocuneata*. ♀. Type.
 Fig. 4. *Agrotis segetum* ab. *marginata*. ♀. Type.
 Fig. 5. *Agrotis vestigialis* ab. *virgata*. ♀. Type.
 Fig. 6. *Lycophotia varia* ab. *nigrescens*. ♀. Type.
 Fig. 7. *Scotogramma trifolii* ab. *robinsoni*. ♂. Type.
 Fig. 8. *Omphaloscelis lunosa* ab. *nigribasalis*. ♂. Type.
 Fig. 9. *Thalpophila matura* ab. *paradoxa*. ♀. Type.
 Fig. 10. *Rhizedra lutosa* ab. *postradiata*. ♀. Type.
 Fig. 11. *Nonagria sparganii* ab. *nigrosignata*. ♂. Type.
 Fig. 12. *Thyatira pyritoides* ab. *miranda*. ♀. Type.
 Fig. 13. *Tethea ocularis* ab. *mediofusca*. ♀. Type.

Agrotis vestigialis Hufnagel ab. **indistincta** ab. nov.

In the male the ground colour of the forewing is very pale and all the dark markings are replaced by pale brownish grey; the hindwing is whitish with or without a pale brown border. The thorax is pale with the usual dark markings replaced by pale brown and the abdomen is very pale brownish white.

The female is similar but slightly darker.

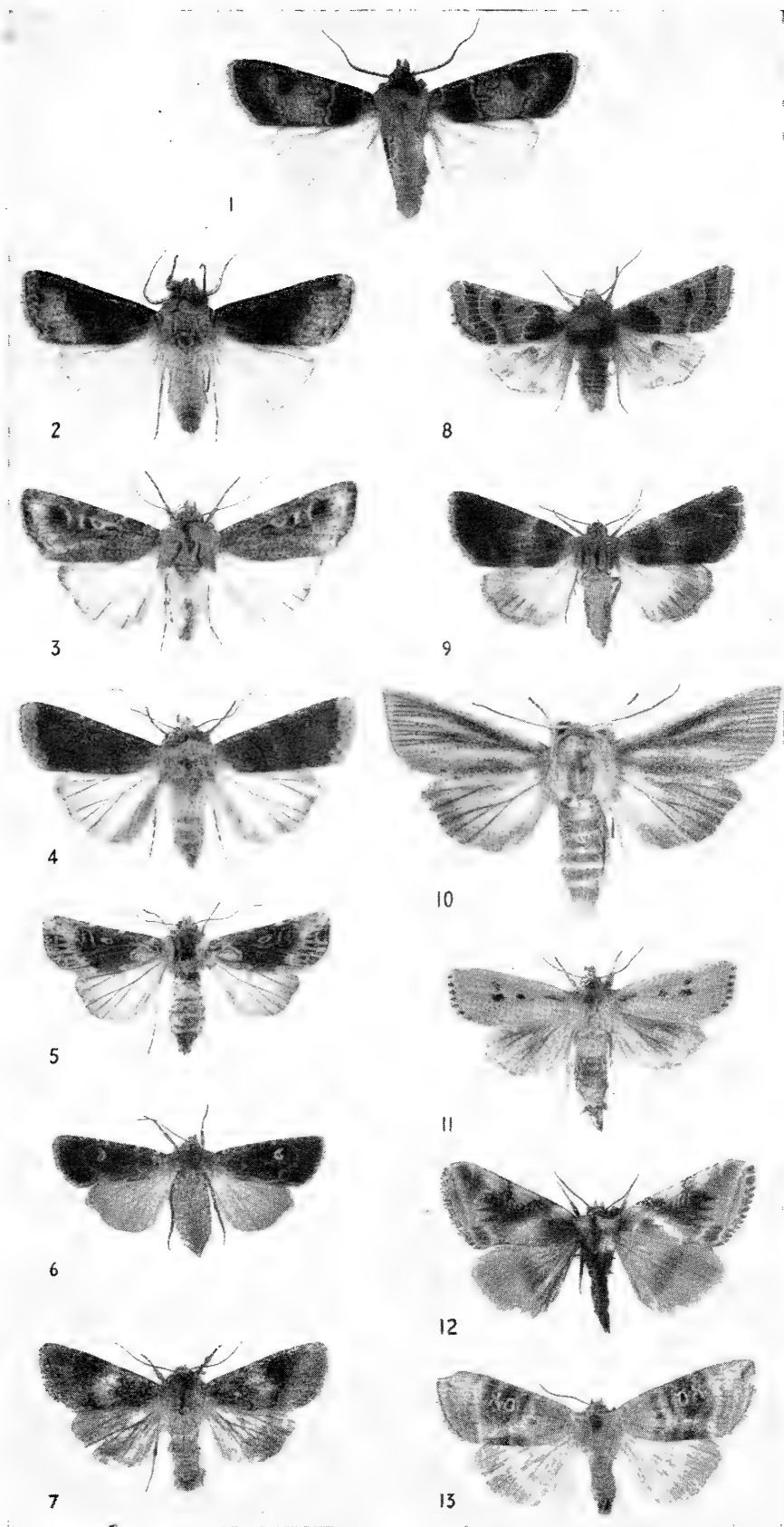
Type ♂ : Sandwich, 27.vi.1936, A. J. Bowes. B.M., 1943, 58.

Allotype ♀ : Sligo, 1892, P. Russ. F. J. Hanbury coll. B.M., 1938, 683.

Paratypes 2 ♂♂, 1 ♀ : 1 ♂ Felixstowe, vii.1901, A. E. Gibbs. Rothschild coll. 1 ♂ Caistor-on-Sea, Norfolk, 14-20.viii.1920, W. J. Brocklehurst. Cockayne coll. 1 ♀ Sligo, 1892, P. Russ. F. J. Hanbury coll. B.M., 1938, 683.

Lycophotia varia de Villers ab. **nigrescens** ab. nov. (Fig. 6).

Forewing—ground colour deep purplish black with the basal, ante- and postmedian lines pale purplish; subterminal line reduced to a row



NOTE: The moths are reproduced slightly smaller than the natural size.

of small dots very little paler than the ground colour; orbicular absent, reniform white and conspicuous.

Hindwing: dark brown, paler towards base.

Type ♀: Devon, McArthur (Bright's sale, 1900). Christy coll.

Scotogramma trifolii Hufnagel ab. **robinsoni** ab. nov. (Fig. 7).

On the forewing the basal area is darkened with wavy transverse lines and clouding; the inner part of the median area is whitish grey with the orbicular stigma paler; there is a blackish transverse band occupying the outer part of the median area, wide at the costa and including the reniform, but narrower between the reniform and the inner margin, bounded externally by the postmedian line; the whole of the marginal area external to the postmedian is dark grey with the subterminal line represented by a row of black wedges. On the hindwing the basal area is whitish grey, the postmedian line is represented by a row of blackish dots on the nervures and the nervures themselves are blackish.

Type ♂: Lymington, Hants., 17.viii.1951. H. S. and P. J. Robinson. Cockayne coll.

Omphaloscelis lunosa Haworth ab. **nigribasalis** ab. nov. (Fig. 8).

The area on the forewing from the basal line to the antemedian line is filled with black scales as in *Agrochola lychnidis* Schiffermüller ab. **nigribasalis** Cockayne; the area between the postmedian and subterminal lines is darker than the rest of the wing.

Type ♂: Arkley, Herts., 20.ix.1951, at light. T. G. Howarth. B.M., 1951, 622.

Omphaloscelis lunosa Haworth ab. **postnigrescens** ab. nov.

The forewing is normal in colour; the hindwing is to a very great extent covered with black scales, but the nervures remain pale and there are a variable number of pale scales in some of the interneural spaces.

Type ♀: Arkley, Herts., 11.ix.1951, at light. T. G. Howarth. B.M., 1951, 622.

Thalpophila matura Hufnagel ab. **paradoxa** ab. nov. (Fig. 9).

On the forewing the basal area is pale; the area between the basal line and the antemedian line is unicolorous dark chocolate brown; the inner part of the median area is pale, but that part external to the orbicular and claviform stigmata and the whole of the marginal area is unicolorous dark chocolate brown. The hindwing has the usual straw coloured basal and dark brown marginal portions.

Type ♀: Purley, Surrey. Wallis Norton. Cockayne coll.

Rhizedra lutosa Hübner ab. **postradiata** ab. nov. (Fig. 10).

On the forewing there is a broad black subcostal streak running outwards from the base and another black streak running along the median nervure and extending on either side of it; from both these streaks thin black lines run on each side of the nervures out to the termen; there is a third shorter and broader black streak not so well defined running along nervure 1. The hindwing with the exception of the basal area is thickly powdered with black scales and the nervures are very black leaving the interneural spaces pale and giving a radiated appearance. The abdomen is powdered with black scales except along the posterior edge of each somite.

Type ♀ : Freshwater, Isle of Wight, 4-11.x.1951. E. W. Classey and H. S. Robinson. Cockayne coll.

Nonagria sparganii Esper ab. **nigrosignata** ab. nov. (Fig. 11).

On the forewing there is a short black streak at the base running along the median nervure; there is a black spot between 2 and 3, and another occupying the lower end of the reniform; there is an oval black spot in the upper or costal part of the reniform, the external outline forming the external border of the stigma, and there are scattered black scales uniting this with the black spot in the lower part; along the termen there is a row of black interneural dots, from each of which dark scales run out into the inner half of the fringe.

Type ♂ : Isle of Wight, viii.1919. Haynes coll. Cockayne coll.

THYATIRIDAE.

Thyatira pyritoides Hufnagel (*derasa* Linnaeus) ab. **miranda** ab. nov. (Fig. 12).

On the forewing the basal area is normal, and there is the usual oblique white stripe running from the costa to the inner margin and the dark band just external to it running to a point just internal to the orbicular; the white band along the costa is present but it is broken by a thin dark brown line and another less dark just external to it, both of which run obliquely up from the reniform; between the oblique white stripe, the white band along the costa and the white loops distal to the median area the space is filled with dark brown tinted with orange especially towards the inner margin; externally this ends in three dark brown spikes pointing towards the termen, limited by two thin blackish brown lines, which are the normal markings greatly accentuated; near the tornus there is a dark mark bounded internally and externally with white; the oblique white stripe near the termen is less sharply defined than usual and is slightly deflected on reaching the dark mark at the tornus; the white loops along the termen are accentuated. The hindwing has the dark band across the middle more distinct than usual, but the marginal dark band is paler than normal.

Type ♀ : Scarborough, bred vi.1934 by H. W. Head from eggs supplied by A. Smith. B.M., 1951, 268.

The wings on the left side and the abdomen are stained.

Tethea ocularis Linnaeus ab. **mediofusca** ab. nov. (Fig. 13).

Normally the median area is bounded on each side by two thin parallel lines, but in this aberration it is bounded by a single thicker line on each side; in the median area there is a fuscous band which includes the reniform and orbicular stigmata but which becomes narrower towards the inner margin; parallel with the antemedian line but nearer to the base is a broad fuscous line and between it and the antemedian is a distinct pale band; there is a similar pale band external to the postmedian line bounded externally by a broad fuscous line; in other respects the wing is normal. The hindwing is normal.

Type ♀ : Cranleigh, Surrey, Leslie Weller. Cockayne coll.

In our September number Dr. Cockayne will describe, name and illustrate some further Aberrations of British Geometridae, including *Mesotype virgata*, *Chiasmia clathrata*, *Abraxas sylvata*, *A. grossulariata*, and *Selenia tetralunaria*.

Colias croceus Fourcroy ab. *duplex* Cockerell

The story of a fraud

By E. A. COCKAYNE, D.M., F.R.C.P.

Cockerell (*Entomologist*, 1889, **22**, 6) describes ab. *duplex* as "upper wings like *helice*, lower typical; or left typical, and right like *helice*", and cites *The Entomologist*, **11**, 52, and August 1876. I cannot trace the second reference, but the first refers to a paper by Edward A. Fitch (*Entomologist*, 1878, **11**, 52, Pl. 1). On the coloured plate, fig. 5, has the forewings *helice* and the hindwings *croceus* and is Mr. P. H. Harper's female variety taken near Enfield, Middlesex, in 1877, and fig. 11 has the left side *croceus* female and the right side *helice*, and is Mr. W. P. Weston's curious specimen taken at Finchley, Middlesex, 7th August 1876.

Two similar specimens are figured by Frohawk (*Varieties of British Butterflies*, 1938, Pl. 3, figs. 2 and 3). Fig. 2 is described as "Hermaphrodite captured at Finchley, Middlesex, 7.8.1876. R. side ab. *pallida*, L. side *croceus*. Rothschild collection". Fig. 3 is described as "captured by H. Edwards, 7.2.1878, in the W. of England. Purchased by W. P. Weston. Upper wings ab. *pallida*, hindwings *croceus*. Rothschild collection". Both specimens are at Tring and when I first saw them they were set high on continental pins. The specimen with the right side *helice* and the left side *croceus* has a label saying "Weston's coll. Finchley, Middlesex, 7.8.1876", and this agrees with the data given by Fitch for the one on his Pl. 1, fig. 11, but I do not think it is the original label. It is female on both sides and Frohawk's description of it as hermaphrodite is incorrect. When Mr. A. L. Goodson re-set it in English style it fell into two parts in the relaxing tin. The fraud had been carried out very cleverly; a cut had been made through the thorax of a *helice* and a *croceus* in such a way that the two parts fitted exactly when gummed together.

The specimen with the forewings *helice* and the hindwings *croceus* has a label on it signed by W. Hawker Smith saying that when it was re-set it was found to be artificial and that it was examined by Dr. Jordan. There are two other labels, one in copper-plate handwriting says "W. of England, 1877", the other says "West of England, 1877. Purchased W. P. Weston of H. Edwards, Feb. 7, 1878".

If Frohawk had read the labels he would have learnt that it was a fraud and would not have figured it. Apart from this he has copied the one label incorrectly. It was bought in February and not caught at that time of year. The locality on both labels is different from that given by Fitch for the specimen figured by him Pl. 1, fig. 5, and Fitch does not say that it was bought by W. P. Weston from H. Edwards in February 1878. The one he figured was in W. H. Harper's collection and the Harper collection was not sold until 1884. When Mr. Goodson relaxed it in order to re-set it it fell into two parts again.

It seems to me unlikely that the specimens figured by Fitch were frauds. According to him one was caught in 1876 and the other in 1877. If the labels are correct there was little time for fraud before they were figured in 1878, and they were at that time in different collections. It is, however, possible that someone manufactured the two insects and

sold each to a different collector after having supplied it with a fictitious data label, but it is more probable that someone perpetrated the frauds at a later date and copied Fitch's plate. If so it is surprising that the label on one agrees with that given by Fitch, whereas that on the other does not agree.

If the specimens figured by Fitch were genuine and these in the Rothschild collection are copies of them, the genuine ones may still exist in some collection. If anyone has seen them and knows where they are, I should like to be informed. There seems to be no hope of solving the mystery in any other way.

Notes on breeding *Polyommatus icarus* Rott. and Foodplants for Blues

By R. C. DYSON.

Dr. Cockayne's leading article (*Ent. Rec.*, 64, 157) on the causation factors of aberrations in Blues, has prompted me to record the results of breeding a small batch of *P. icarus* in 1951. I obtained ova from a *P. icarus* ab. *arcuata*, this female was rather small and the arcuate form was more pronounced on one side. I regret that the larvae were rather neglected owing to pressure of work, and adequate foodplant was not provided; consequently the resulting brood were not very large in size.

I did not count the ova or how many hatched, but 41 larvae pupated, 4 of which failed to produce an imago. 19 males and 18 females emerged and can be classified as follows:—

MALES	FEMALES
14 normal	6 normal
1 spots enlarged, tending towards <i>arcuata</i>	1 <i>semi-arcuata</i> —one side
1 <i>semi-arcuata</i>	1 <i>arcuata</i> one side
1 <i>arcuata</i>	3 <i>arcuata</i> —both sides
1 <i>arcuata-basijuncta</i>	2 <i>arcuata</i> with <i>basijuncta</i> one side
1 <i>basijuncta</i>	3 <i>arcuata-basijuncta</i>
	1 <i>arcuata</i> one side, <i>basijuncta</i> both sides
	1 <i>bi Inigrum-basijuncta</i>

It is possible that the parent had *basijuncta* tendencies, but I did not notice this, or it may have paired with a *basijuncta* male.

Unfortunately I had not the commonsense to pair two *arcuata* forms to produce an F2 generation, but I will most certainly attempt it at the first opportunity.

Foodplants. I came to the conclusion in 1951 that it is impossible to breed the Blues successfully without adequate supplies of established foodplants growing in flower-pots. This can be attained in two ways, firstly, by digging up the plants in the wild, which is a difficult matter with the Horse-shoe Vetch (*Hippocrepis comosa*), owing to its long tap root, and as Dr. Cockayne says, the disadvantage of a probable introduction of eggs from a wild female. Seedling plants can sometimes be found on steep banks which do establish themselves much better than the older plants. In the case of Bird's-foot trefoil (*Lotus corniculatus*) it is really only practical to dig up the plants in the early spring before

much growth is made, and it is then difficult to differentiate the true plant from Hop trefoil.

The second method, and in my opinion the best, is to collect seed and raise the plants at home.

In 1951 I collected seeds of *H. comosa*, *L. corniculatus* and *Anthyllis vulneraria*. The seed was sown in October in gentle heat, pricked out into seed boxes, potted into small pots in early spring, and placed in a cool frame. I now have nice plants of each, approximately five inches across, *H. comosa* is much slower growing than the other two and will probably take another season to produce large plants with plenty of foliage.

Heat is only a luxury, the seed will germinate outside in spring, but naturally it will take longer to obtain large plants. Four or five plants can then be transferred to a large pot when required without fear of the plants wilting or dying. As in so many things in this life, successful breeding of lepidoptera can only be accomplished by careful planning and preparation, two or even three years ahead.

[This is a valuable contribution. If we take insects approaching *arcuata* or *arcuata* on one side and include *bi Inigrum* as a form determined by the same gene, the ratio of normal to *arcuata* is 21:16, which is close to the 1:1 ratio expected if *arcuata* is dominant. I am assuming that the unknown male parent was normal. Alternatively the figures would fit those expected of a recessive if the male parent were heterozygous for the *arcuata* gene. If it had been possible to obtain a pairing of *arcuata* × *arcuata* this could have been decided. If *arcuata* is dominant the pairing should have given 1 normal: 2 heterozygous *arcuata*: 1 homozygous *arcuata*, and we should have learnt what homozygous *arcuata* looks like. *Basijuncta* is presumably independent of *arcuata* and the ratio of normal to *basijuncta* is 28:9, which is very close to the 3:1 ratio expected if *basijuncta* is recessive, assuming again that the male parent was normal.

It is to be hoped that other entomologists will repeat the experiment and, if possible, obtain an F2 generation by pairing *arcuata* × *arcuata*.—ED.]

A Method of Mounting Genitalia, etc. for incorporation into collections of pinned insects

By D. KEITH McE. KEVAN.

In many groups of insects, it is necessary to examine microscopically various structures not readily seen without dissection. These include such things as mouthparts, etc., and especially the male (and sometimes female) genitalia.

Four methods of preserving these structures are commonly in use:—

- (1) By keeping the material in preservative in small tubes or vials.
- (2) By making conventional microscope slides of the dissected parts.
- (3) By mounting the objects dry on cards which are pinned with the insects or which are the same as those on which the insects themselves are mounted.
- (4) By sealing the objects with some form of mounting medium between a strip of thin celluloid or other transparent plastic sheet and a small coverslip (*cf.* Britten in Eltringham, 1930: 102-3).

Methods 1 and 2 suffer from the disadvantage that it is impossible to keep together, in a convenient manner, the original specimen from which the object came and the part dissected out. Some method of cross-check and reference numbers is thus needed between the collection of whole mounts and the dissected parts, leading to errors even on the part of the original worker, not to mention the possibility that the two collections may become separated with the passage of time! It *may* be possible to pin fluid-preserved material with the original specimens, by means of the cork of the tube, but the preservative will evaporate sooner or later and will constantly have to be replaced unless some special sealing material (which must be replaced every time the object is examined) is used.

Method 3 gets over the main objection to methods 1 and 2 but has several distinct disadvantages otherwise. Shrivelling and distortion may occur, the object, being exposed, is liable to become damaged or displaced and, most important, it is impossible to examine the object by transmitted light.

Method 4 is the most satisfactory and is probably ideal for certain purposes, especially in connexion with minute insects, but it has one major drawback (also shared by certain types of microscope slide preparation) and that is that the object becomes flattened, often losing its original shape, and the relationship of the various parts may become distorted (*cf.* Eltringham, *l.c.*: 37). Cooper (1947) suggests using cellophane as a substitute for a coverslip (although he considers that the latter is probably the more satisfactory) and, since this material is flexible, the same degree of distortion does not result. But for rather larger or thicker objects than those with which he was concerned, the resultant irregular surface of the cellophane would be far from satisfactory.

It would doubtless be possible to modify Britten's method by means of a 'ring' of celluloid separating the main strip from the coverslip, but, although I have not used this method, I am of the opinion that it would be very time-consuming. As an alternative, I suggest the following method of making 'cells' from Bristol board:—

The board is cut into normal mounting strips—say $\frac{3}{8}$ " \times $\frac{3}{4}$ "—and then, by means of an ordinary office letter punch*, a circular hole a fraction less than a quarter of an inch in diameter is made at one end of each strip and over this hole is fixed (by means of whatever mounting medium is preferred for the completed preparation) a quarter-inch square coverslip. The coverslips may either be cut from standard sizes by means of a writing-diamond or may be ordered cut to size. A stock of these cells is prepared, allowed to dry off and stored ready for use.

When it is desired to make a permanent mount, a cell is placed cover-slip down and a small drop of mounting medium is put in the cavity (*i.e.* on the coverslip). The object is then arranged in the mountant (after such preliminaries as would be needed for the preparation of a microscope slide or one of Britten's mounts) and a second coverslip (of the same size as the first and also preferably with a very small drop of the mountant upon it) is carefully placed over the object which is thus sealed in a cavity of a depth equal to the thickness of the

*Small punches which make only a single hole are also available.

Bristol board. Data are then written on the strip and a pin put through the 'solid' part of the completed mount which is allowed to dry off before being transferred to its final position below the specimen from which the object was dissected. The complete preparation is both neat and convenient.

Variation of the 'ply' of the Bristol board selected for the cells regulates the depth of the cavity according to requirements. The diameter of the cavity is probably sufficiently large for most purposes but where larger objects are to be mounted, the size of the card strip and the hole punched in it would, of course, need to be increased, using a different type of punch (or a cork-borer) for the latter. The size of the coverslip would also be increased so as to be just sufficiently large to overlap the margins of the hole.

The mountant used depends largely on individual preference, the type of object and degree of transparency required. Personally, I use a chloral gum in most instances for the genitalia of Orthoptera since objects may usually be placed in it with a minimum of preliminary treatment, clearing being largely automatic and not excessive. Other workers may prefer Euparal, polyvinyl alcohols or Canada balsam. The amount of mounting medium to be used in the cavity will be judged by experience, but the droplet should cover about two-thirds of the area of the lower coverslip and the meniscus should be distinctly visible when the cell is viewed horizontally.

A somewhat similar method to the above, using standard coverslips, has long been known (*cf.* Britten, *l.c.*) but it has been used mainly for larger objects, being too cumbersome for most genitalia. Rehn (1948) describes a modification which he finds useful for the mounting of the wings of cockroaches and similar objects. His method is to cut one end of a Bristol board strip (of fairly large size) to a U-shape, the distance between the arms being appropriate to the size of the object it is wished to mount. The square coverslips, of conventional standard sizes, are affixed in the same way as in the method described above but one edge is free, corresponding to the edge of the Bristol board strip which has been cut away. The advantage of this method for larger objects is that it makes allowances for the contraction of the larger quantities of mounting medium involved by permitting additional amounts of the medium to be added, if necessary, by way of the 'open' edge.

I have to thank my father, Mr. D. K. Kevan, of Edinburgh, for suggesting the above method.

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WHAT WERE THEY?—"Our road was in some places filled with an exceedingly beautiful insect, in form something like a caterpillar, but shorter and thicker, and covered with a fur-like velvet of the brightest scarlet" (from *Life in Abyssinia*, by Mansfield Parkyns, 1853. Vol. I, page 138).

The Lycaenidae of Hampshire Chalk Downs

By PAUL H. HOLLOWAY, F.R.E.S.

The distance between St. Catherine's Hill, Winchester, and Shawford Downs, my nearest chalk localities, is approximately three miles. The biological and botanical conditions are almost identical, yet there is some contrast in the insect population. Of the Lycaenidae, the family attracting our greatest attention, only two species appear in roughly the same numbers, namely, *Polyommatus icarus* Rott. and *Lycaena phlaeas* Linn. It may be of interest to record here the incidence of the remaining species:—

	St. Catherine's Hill.	Shawford Downs.
<i>Cupido minimus</i> Fuessl.	Fairly common.	Abundant.
<i>Aricia agestis</i> Schiff.	Abundant.	Scarce.
<i>Lysandra coridon</i> Poda.	Common.	Abundant.
<i>Lysandra bellargus</i> Rott.	Abundant.	Formerly common, now rarely seen.
<i>Callophrys rubi</i> Linn.	Common.	Scarce.

The 'Skippers' *Erynnis tages* Linn., *Pyrgus malvae* Linn., *Thymelicus sylvestris* Poda and *Ochlodes venata* Br. & Grey are common generally; *Melanargia galathea* Linn. abounds at Shawford but is less common on the Hill. Noteworthy among the Heterocera are *Zygaena filipendulae* Linn. and *Z. trifolii* Esp., and on the southern slopes of St. Catherine's Hill a fair number of *Procris geryon* Hb.

The impression of the Hill from the west was, until this year, a sheer, gleaming chalk face, devoid of all vegetation; the slope bordering the by-pass has now been made less steep and turfed over to prevent miniature chalkslides, which once occurred with alarming regularity to the danger of passing traffic.

At the end of the long grass valley dividing the Hill from Hockley, rough hedgerows of white hawthorn, splashed with pink, and various shrubs rise in a straggling mass, bordered with nettles and lank grass, and it is here that *C. rubi* is found in plenty, basking in the sunshine far out of reach of the net! In the valley itself a small colony of *Euphydryas aurinia* Rott. exists and *C. rubi* flies around solitary bushes.

The distribution of all species of 'Blues' is fairly even from the flatness of the valley to the highest ridge, where grass meets sky. On the southern and western sides the Hill is so precipitous that ascent is difficult even on the few beaten tracks, but on the far sides only a gradual slope is encountered, and butterflies are infrequent. Similarly, few insects are to be found on the highest point, a flat expanse surrounding a central tree-clump of majestic height.

The scenery from the hill-top is delightful: the whole panorama of the city to the north; the grey tower of the cathedral rising stately and serene amid the conglomeration of roofs; a small church spire on a hill, and distant white specks of stone manifesting invisible tumuli; the quiet river below where *Panaxia dominula* Linn. reaches the limit of its local distribution; buttercup meadows beyond and, stretching up to the western horizon, a vast counterpane of green sward and tilled earth. Sedge warblers chatter in the shrubs on the eastern boundary every spring, hundreds of yards from water.

The weather was perfect for our first visit this season, on 18th May; a blue roof of sky and the whisper of warm wind rippling the grass. *C. rubi* and *C. minimus* were already well represented and pairing. A week later the weather was unchanged, *C. minimus* was now common and the first two *A. agestis* appeared. The slug-like cocoons of *Z. trifolii* were conspicuous, several larvae spinning up and one imago in flight. Each time the sun was drowned by a greying cloud the wind-borne butterflies disappeared, but *Epirrhoe alternata* Mull. continually took flight from the hawthorn clumps.

Deterioration of weather lessened activities considerably until 5th June, when conditions became more settled and warm; sunny, with high-piled clouds. The Shawford locality is mainly flat, sloping only on the east side and down to the railway. On this slope *C. minimus* abounded but was found in less numbers on the high level, most specimens now showing signs of wear. *Calostigia pectinataria* Knoch was in its usual profusion round the cluster of trees on the station corner. At the south end of the downs a gravel road under the railway bridge leads to the river Itchen. Along its banks numerous Demoiselles (*Agrion splendens*) made brief flights. A pied wagtail was seen attacking *A. splendens* in flight, the Zygopterid successfully evading its attacker until the fourth onslaught.

On St. Catherine's Hill *L. bellargus* and *A. agestis* were well out and in fine condition with a predominance of about ten ♂♂ to every ♀; *C. minimus* was still flying but, as already observed, in bad shape. Scores of Zygaenid cocoons were to be found on grass stems, some white and semi-transparent, others quite yellow. Full-grown larvae were also seen at the grass-tips, preparing to spin.

The first *Maniola jurtina* Linn. ♂ was put up at Shawford on the grey morning of 8th June. A thin veil of rain came. We took the river path toward Winchester; swallows, swifts and pied wagtails were fly-catching within inches of the water's surface. The rain became more intense and our activities were abandoned.

With some reluctance we watch the fading out of the spring broods, but with what alacrity we return, when *L. coridon* is emergent and *L. bellargus* and *A. agestis* make their second appearance! *L. coridon* is by far the most abundant of the Lycaenidae and in these localities quite variant.

Perhaps of all forms of collecting the 'Blues' afford the greatest joy: the frequency of aberrations and the conditions under which we are often privileged to work.

The Influence of Thunderstorms on Variation of Lepidoptera

By S. G. CASTLE RUSSELL.

Several instances of the emergence of extreme aberrations of various species of butterflies immediately after an unusually violent thunderstorm have convinced me that the alteration in colour and form was the result of the atmospheric change caused by the lightning; but there are so many factors to consider, and no facilities for experiments, that it can never be more than a matter of conjecture.

Many years ago a Lightning Research Committee investigating the methods of protection pointed out that lightning discharges are of two distinct characters called the 'A' and 'B' flash respectively. The 'A' flash is of simple type. Its violence is diminished by the silent discharge which goes on during a storm from the various points of a structure that are more or less in contact with the earth, such as a building or tree, etc. Its path is more or less prepared beforehand by ordinary electrostatic conditions.

The 'B' flash is a disruptive discharge of much greater suddenness and violence which falls on a structure without electrostatic preparation. It may strike in several places at once and a column of hot air is the path most favoured by this kind of strike. I have had many opportunities of investigating the damage caused by 'B' flashes some of which were interesting and curious. In one particular instance I was asked to call and see the result of a 'B' flash in the house of a wealthy man in the West End of London whose hobby was collecting rare pewter. In this case the flash entered the room by a steel pipe carrying electric wires, close to the fireplace. From this it jumped to a large collection of pewter pots, etc., housed on a long mantelboard. These were all reduced to melted metal, and the room was full of small round metal balls which must have emanated from them. The owner was very much concerned, as many of the items were unique and therefore irreplaceable.

Anyone who has seen the effect of a strike of the 'B' type on a large oak tree several hundred years old and its condition after will realise the immense power of the strike. There used to be one in Pamber Forest, the large trunk being entirely split from top to bottom and the interior burnt out.

I remember also an incident in the Cotswolds when collecting with the Rev. W. O. W. Edwards and Mr. C. Dixon of Micheldever. We were in the latter's car and had to pull up owing to a sudden and very violent storm, the rain being so heavy that we could not see ahead. A flash struck so close to a front mudguard that we were all momentarily 'blacked out', and the atmosphere became very sultry with a sulphurous smell.

The late F. W. Frohawk in his *Varieties of British Butterflies* opined that certain natural forces may influence the production of varieties and aberrations and that the chief one, so far as is known, is climatic. Great changes of temperature, sudden extremes of light rays penetrating foliage during stages of development, shock caused by concussion, a sudden heat, may bring about aberration. Now Frohawk was a field collector of very long experience and gifted with keen observational powers as is evidenced by his well known publications, and his conclusions are entitled to consideration. Certainly the conditions envisaged by his expressed opinion would apply in the case of a thunderstorm.

It would seem that a pupa on the point of eclosion which would happen to be sited in the vicinity of the point or points of the flash would be affected, but as regards the extent of the area affected it is impossible even to guess. During a violent storm 'B' flashes may occur in numbers of points widely distributed in such an area as the New Forest for instance, where several of the instances I witnessed occurred. These instances are as follows.

In 1919 I was collecting in an enclosure in the north of the Forest with my wife. The day up to 4 p.m. had been dull and the *Argynnis paphia*, which we were examining, scarce, most of them being high up in the trees. Suddenly a very violent storm came on and lasted for about half an hour. When it had passed over a short spell of very hot and sunny weather occurred. The *paphia*, which were very abundant that year, came down to the bramble very quickly, and I at once netted a ♀ with pale straw hindwings and my wife a form with heavy black blotches on the forewings. Both had undoubtedly very recently emerged as their flight was very weak although each insect was perfectly formed. As they appeared a little limp we put them in large chip boxes before killing them in the cyanide bottle. These were two of the only three aberrations we saw in that particular enclosure until a fortnight later. This particular year, it should be stated, was one of the great 'var.' seasons in the Forest, and although aberrations were uncommon in the enclosure referred to, in other enclosures about a fortnight later they were seen in considerable numbers. I was told by a keeper that the soil (top) was gravel instead of clay as in other enclosures. This may have influenced the production of aberrations. In my experience aberrations are more likely to appear on clay soil than on chalk, gravel, or sand.

In this same enclosure in early July 1940 I was collecting with the late Ernest Joy. The sun was shining when we arrived and we wandered a short distance from the car to note that the *paphia* were apparently just emerging, being mostly ♂♂ in small numbers. We were then driven into my car by the advent of a particularly violent storm which after about half an hour passed over and sunshine resumed its sway for the rest of the day. As soon as the rain ceased I walked along a ride quite close to the car and saw in the distance what appeared to be a large dark butterfly journeying across from the dark side to a large bramble bush on the other and sunny side. When I arrived at the bush I saw an almost entirely black ♂ *paphia* in such a limp condition that I could have taken the insect in my fingers. Preferring the use of the net, however, I waited until the insect got into a position where there would be a chance of successfully netting it; but I was in too much of a hurry and did not exercise my usual patience, with the result that I missed the insect and it must have fallen quietly into the bush and on to the ground as is usual with *paphia*, and crept away. The bush covered a large area and was quite inaccessible at the bottom, and although Joy and I spent the rest of the day hoping that it would turn up again as *paphia* often do if not alarmed, we did not meet with it. It was probably frightened and on emerging from the bush moved away to a safer area. Although we paid other visits to the enclosure in succeeding days during the season we never met with an aberration of any kind.

In certain enclosures all the large fritillaries were abundant in that year 1940, but aberrations were not in evidence. It was in the following year 1941 that aberrations of *paphia* occurred in considerable numbers in certain of the enclosures but not in all, and it was in this year that the third incident occurred. Early in July Colonel Burkhardt and I were collecting in an enclosure in the north of the Forest where the soil was clay. *Paphia* were just beginning to appear in small numbers,

mostly ♂♂. There were two other well-known collectors in adjoining enclosures. Up to the 10th July, although both sexes were then in numbers, including *Limenitis camilla* and *A. cydippe*, none of us met with any out-of-the-way forms. On the 11th and 12th July two very violent storms occurred in the morning, and later on in the day each of us began to meet with various aberrational forms, all quite fresh and evidently recent emergences. From then until the 24th of the month aberrations continued to emerge, but after this date only worn examples were met with notwithstanding that typical specimens continued to emerge until well into August. No other storms occurred in the area. This season was very remarkable for the large numbers of aberrations of various species met with in a limited number of enclosures and not like 1918-19 when practically all of the 55 odd enclosures swarmed with insects and aberrations were in good numbers. In each case at the end of the two-year period all the species became exceedingly scarce, except in one or two enclosures where the abundance continued for several years but without any variation.

Another incident occurred in 1936 when Mr. Clifford Wells, my wife and myself were collecting daily on one of the Winchester downs (now, alas, ploughed up). During the first week of August all the ♀♀ *Lycaena coridon* were of the typical brown form and none had wing areas of blue, as often occurs. This species was fully out, both sexes. At the end of the week our car was held up within a mile or two of the down by a violent thunderstorm with unpleasant flashes of lightning which were unpleasantly near. This passed over and when we reached the downs we quite expected to find the *coridon* half drowned in the wet and sodden long grass; but to our surprise they were flying about in the sun just as usual and in the same large numbers. On the short grass breeding area where we found fresh numbers each day we began to meet with the blue ♀♀ for the first time. On the succeeding day neither of us met with a freshly-emerged blue example and although a certain number were met with on the wing these gradually died out and no more were seen during the rest of the month. This incident was to us most convincing and happening to mention it to the late L. W. Newman he said that exactly similar experiences had happened to him during his monthly stays at Folkestone, especially amongst the *L. bellargus*.

Of course this idea of mine relative to the effect of thunderstorms is little more than a guess and is open to all sorts of objection. There seems no reason why our budding entomologists should not record the dates of thunderstorms in localities they frequent with a view to noting if such have any effects on the fauna.

I have culled the following notes from copies of the *Record*, *The Entomologist* and *Proceedings of the South London Society* as bearing on the subject. Of course it is well known that high temperature will produce aberrations especially amongst the fritillaries, but they are mostly cripples and of unnatural appearance—really perfect forms of full size being rare, but I have no experience of the process.

Proc. South Lond. Ent. Soc., 1919-1920: extract from a paper read by H. J. Turner on the variation of *Aglais urticae*. "As showing to what a considerable extent heat will affect this insect (prior to emerg-

ence) I was examining some specimens in the Bond Coll. in which there were two short series of *urticae* from the same brood, one lot showing emergence before a storm and one after it. One takes it that the difference in colouration, *i.e.* one series being lighter than the other, would be due to the considerable differences in the temperature before and after the storms." The Bond Coll. was formed I fancy long before 1860 and prior to the Standfuss experiments. In the same *Proceedings* 1942 part 2 there is a coloured plate showing two melanic forms of *A. urticae* which emerged during a heavy thunderstorm at 2 p.m. In the accompanying note Mr. F. V. L. Jarvis wrote as follows:—

" On the 5th July 1941 14 young larvae of *A. urticae* were collected from a web and reared on nettle under normal conditions. Pupation took place between the 20th and 25th July. Emergence began on the 14th: the first seven insects were dark orange red with heavy markings. On the 7th at 2 p.m. the two melanic aberrations appeared. A heavy thunderstorm was in progress but no significance was attached to this fact. The remaining five pupae failed to emerge. A suggestion is made that these five carried lethal forms, but Mr. J. Newton of Sunderland does not support this view and gives a verdict of death owing to injuries that occurred to the pupae when he had to remove them to take away with him on vacation."

From the description of the first seven insects that emerged I fancy they were of the *polaris* form which appears frequently when breeding large numbers of the species, but I may of course be wrong not having seen the insects.

I remember a somewhat similar experience being reported to me by Mr. C. W. Sperring but I have no detailed note of it. This article may produce other incidents bearing on the subject. Of course thunderstorms in the New Forest and elsewhere are not unusual during normal summers, but the exceptionally heavy type which would produce the conditions requisite to affect pupae are in my experience very rare and I do not personally remember I have had to experience unpleasant feeling owing to the nearness of flashes of the 'B' type in England.

[Three of these are figured (*Proc. S. Lond. Ent. and Nat. Hist. Soc.*, 1941-1942, Pl. 8). One is *polaris*, the other two are called by Jarvis *ichnusoides* de Selys and *nigra* Tutt.—Ed.]

[We have enjoyed reading Mr. Castle Russell's attractive paper and have no doubt that our readers will be equally interested; but on physiological grounds we must need dissent from his major premise, that thunderstorms can cause aberrations. The wing pattern of butterflies is determined at an early period of the pupal stage and all aberrations are either genetic or pathological. Some aberrations which are genetic are only expressed under special environmental conditions. The appearance of aberrations immediately following a thunderstorm can, therefore, be no more than a coincidence.—Ed.]

RHYACIA SIMULANS HUFN. (PYROPHILA SCHIFF.) IN SURREY.—I was shown recently an imago of this species which was taken on 4th July 1949 at Ewell by Mr. H. Tunstall. He took it in his garden off Buddleia blossom. I know of no other record of *simulans* for Surrey.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 5.vi.52.

Spring Larvae in Cranborne Chase

By H. SYMES, M.A.

The memory of a very successful day's larva-beating in Cranborne Chase last September (*Ent. Rec.*, 63: 277) made me look forward eagerly to a visit to this locality in the spring. Towards the end of May I went there twice. On the 23rd Dr. H. King and I concentrated our efforts on some old well-grown maple trees from which we had beaten four larvae of *Ptilophora plumigera* Schiff. and a much larger number of *Eupithecia inturbata* Hüb. last year. This time we obtained eight *P. plumigera* and 24 *E. inturbata*. These two species seem to be confined to a very restricted area, and neither of them was to be found on other maples within easy reach. We also obtained two larvae of *Poecilocampa populi* L., which I have never found on maple before: incidentally it is not given as a foodplant for this species in A. G. Scorer's *Entomologist's Log Book*.

On 28th May the Rev. F. M. B. Carr and I visited the area where we had been most successful last autumn, but larvae were far from plentiful. We beat various trees, mainly ash, birch, hawthorn and maple. There was a fair variety of larvae, but few were at all common, and several were represented only by singletons. Maple yielded one *P. populi*, birch one *Brephos parthenias* L., and two or three small *Achlya flavicornis* L., hawthorn one *Nola cucullatella* L., one *Allophyes oxyacanthae* L., and one *Opisthograptis luteolata* L. Ash and privet were most unproductive: the former gave us one small *Orthosia gothica* L. and the latter a very small *Amphipyra pyramidea* L. The only larvae at all plentiful were *Operophtera brumata* L., *Oporinia dilutata* Schiff. and *Orthosia stabilis* Schiff. Others that we noted were *Colotois pen-naria* L. and *Erannis aurantiaria* Hüb.

After lunch we moved to another locality about a mile and a half away. Here the vegetation was somewhat different, with oak and birch predominating. Larvae were more plentiful. At the entrance to the wood some hoary old hawthorns yielded four fat *Episema caeruleocephala* L. and a couple of *A. oxyacanthae*. From the birches came half-a-dozen *A. flavicornis* and as many *B. parthenias*, both species being in their last skin. Full-grown *Thecla quercus* L. were abundant on the oaks, and there were plenty of *O. stabilis*, *O. cruda*, and *Eupithecia abbreviata* Steph., as well as *O. brumata* and *O. dilutata*. Strangely enough we saw but one *Erannis defoliaria* Cl., and other singletons were *N. cucullatella* and *Crocallis elinguaris* L. on hawthorn, and *Drymonia ruficornis* Hufn., *Lymantria monacha* L. and *Graptolitha ornithopus* Hufn. on oak. There were also a few *Biston strataria* Hufn. and *A. pyramidea*: one of the latter spun up on the following day.

Future prospects in Cranborne Chase seem rather dubious. The area under pigs is being steadily extended, and the animals appear to be leading a happy life. But many young ash trees which supported *Craniophora ligustri* Schiff. last September either were destroyed during the winter, or were enclosed in barbed-wire compounds. Elsewhere some magnificent beeches were felled. But the buzzards are still there, and I hope and believe that it will be many years before they and entomologists are driven away from the Chase.

Collecting Notes, 1952

By W. REID.

The season in Sheffield has been, as elsewhere, very much earlier than last year, although nightly frosts were experienced until the 16th of February, on which night, after a warm day, *Theria rupicaprararia* Schiff. were in abundance on the hedges. *Phigalia pedaria* Fab., *Erannis marginaria* Fab., *E. leucophaearia* Schiff. and *Alsophila aescularia* Schiff. appeared on the 19th, with the temperature round about 45 degrees F. The evenings about this time were spent in setting the large numbers of *Orthosia advena* Schiff. and *Poecilopsis lapponaria* Schiff. which were emerging from the pupae resulting from my visits to Wallasey and Struan last year. As usual, many of the *lapponaria* have decided to go over for another year. Of the *advena*, about 50% are of the dark form, the others being of the grey banded form. Delayed emergences have been numerous in my pupae-boxes this year, all the following coming out from larvae collected in 1949:—*Achlya flavicornis* L., *Notodonta dromedarius* L., *Pheosia gnoma* Fab., and *Lophopteryx capucina* L. About the end of February I had a female each of *P. lapponaria* and *Nyssia zonaria* Schiff., both fresh in a mating-cage, and on introducing a male *lapponaria* he paired with the ♀ *zonaria*. The resulting larvae are progressing favourably and are now near the pupating stage.

On the 8th March I met Mr. Gordon Smith at Delamere Forest, and the white m.v. lamp brought in many *Apocheima hispidaria* Schiff., and other Lepidoptera included *A. flavicornis*, *Orthosia gothica* L., *P. pedaria* (all type form), *E. leucophaearia* and *A. aescularia*.

Orthosia incerta Hufn. appeared in Sheffield, together with *A. flavicornis*, on 17th March, the former fully a month earlier than in 1951; *Biston strataria* Hufn. on the 18th; *Cerastis rubricosa* Schiff. on the 19th; *O. gothica* and *O. stabilis* Schiff. on the 20th. A spell of cold weather then set in, which lasted until 3rd April, when I left for Aviemore, to try to take *Brachionycha nubeculosa* Esp., picking up Dr. Neville Birkett of Kendal and a young friend of his on the way. Stopping for a short time at Struan we found *P. lapponaria* common on the railway posts. The night of 4th April was the only night fit to use the mercury vapour lamp, and only one specimen of the sought-after insect appeared, but the lovely Scottish form of *flavicornis* was plentiful, with *O. incerta*, *O. gothica* and *Calostigia multistrigaria* Haw. also appearing. For the next two days we experienced the usual Aviemore early spring weather, snow and sleet broken by bursts of bright sunshine. Only by hard searching did we find ten *nubeculosa* in all and my six cost me just about 18 hours, or one every three man-hours. But I think the main emergence had not taken place, and our females provided us with eggs.

G. multistrigaria and *Earophila badiata* Schiff. appeared in Sheffield on the 9th. On the 10th my son and I went to a common near Gainsborough where we took a short series of *Orthosia populeti* Fab. and we noted *B. strataria*, *C. rubricosa*, *Panolis flammea* Schiff., *O. incerta*, *O. stabilis*, and *Conistra vaccinii* L. on the sheet. We also took the

Scottish form of *flavicornis* which had obviously crept into my bag at Aviemore and had only just found its way out.

On 12th April we visited Bishop's Wood to find that all the young sallows along the edges of the main road through the wood had been cut down by the woodmen. Only two *Gypsitea leucographa* Schiff. put in an appearance and at the headlights of the car after we had packed up our gear to return to Sheffield. This absence of sallows was a pity as I am sure it pays to have the lamp within reasonable distance of the blooms, as the scent draws the insects within the range of the light. A further visit on the 13th in company with the Baron de Worms was even less successful, he taking only one *leucographa*; but the weather was not very favourable. We anticipated a good night in Sheffield on the 14th, as that day was much warmer; but the evening was completely spoilt by a very severe and wet thunderstorm about 7 p.m. Hardly an insect was seen.

Orthosia gracilis came to the light in Sheffield on the 18th, and on the 19th, again at Bishop's Wood with Mr. Pilcher of Boston, *Xylotropa areola* Esp., *O. munda* Schiff., *O. populeti*, a few *G. leucographa* and some very dark forms of *Selenia bilunaria* Esp. were taken.

About this time the progeny of the female *Apatele menyanthidis* View. var. *suffusa* were coming out in my pupa-box (see *Ent. Rec.*, 63: 268). All have turned out to be var. *suffusa* but about 25% have not developed their wings normally: all have fully expanded but in unusual positions—the lower wings over the upper, and even those which are normal, although they are fine large insects, seem to be weak. They were certainly not capable of sustained flight. The parent was, of course, taken wild, and the stock in the place where we took her may be much inbred, and if the same weakness occurs in the wild this may be a reason why we find so few of the var. *suffusa* on the walls when the type is relatively common.

Pheosia gnoma Fab. appeared in the garden on 4th May; *Cucullia chamomillae* Schiff. on the 12th; and I did not know that *Drymonia ruficornis* Hufn. occurred in Sheffield until four came to the sheet in the garden on 14th May. On this date I also took the very light form of *Ectropis bistortata* Göze, the first I have seen amongst dozens of the dark northern form.

On the 16th ten "first 1952 appearances" occurred:—*Spilosoma lubricipeda* L., *Cynia mendica* Cl., *Apatele rumicis* L., *Ochropleura plecta* L., *Abrostola triplasia* L., *Bena fagana* Fab., *Opisthograptis luteolata* L., *Lomaspilis marginata* L., *Biston betularia* L., *Gonodontis bidentata* Cl. On the 18th twelve more were amongst the thirty-three species on the sheet:—*Notodonta dromedarius* L., *N. ziczac* L., *Lophopteryx capucina* L., *Pheosia tremula* Cl., *Dasychira pudibunda* L., *Drepana falcatoria* L., *Apatele megacephala* Schiff., *Diataraxia oleracea* L., *Hadena bombycina* Hufn., *Epirrhoe rivata* Hub., *Bapta temerata* Schiff., and *Ecliptopera silaceata* Schiff. On this date also the first *A. menyanthidis* and *H. bombycina* were found on the walls on the moor together with *Eupithecia nanata* Hüb. *Ematurga atomaria* L. was also flying freely. On 22nd May the melanic form of *G. bidentata* appeared at the sheet in the garden, several more being seen during the next few days. *Hydriomena coerulea* Fab., the black form indistinguishable from those at Formby, also arrived.

The 23rd May was a warm overcast day and the evening proved to be a good one for light, forty-six species coming to the sheet in the garden. First appearances amongst this lot were three *Apatele alni* L., two of which were melanic, and all males, *Harpyia hermelina* Göze and *Lampropteryx suffumata* Schiff., the latter two being the first I have seen in Sheffield. The 24th May was very much cooler, but a visit to Sherwood Forest in company of Mr. T. D. Fearnough of Dronfield resulted in a short series of *Drymonia dodonaea* Schf. and a singleton of *Plagodis dolabraria* L., among the few other species on the sheet.

(To be continued)

How can the Young Collector learn the Latin Names?

By P. SIVITER SMITH.

When I started collecting at around the age of seven, it was all English names. So they remained until I was about twelve, when I was given a copy of 'South' and I noticed they had other names—Latin ones. I ignored these and happily and effectively used the English ones. At about the age of fourteen my interest became closer and copies of other books were bought and series of the entomological magazines too, from which I hoped to learn where to go and how to find the rarities. Then the trouble started. Latin names only! What searching there was and what wasted time and how cussed I thought the scientific people were! I solved it, quite quickly in the end, in this manner—but first, a digression.

There have been endless arguments about the use of English names for our butterflies and moths. I'm not going into that. Let the young collector accept the fact now that Latin names are essential and should be used—he will find out later why this is the case, so just let him accept it for the moment. Therefore he must also accept that he should learn and use these Latin names as early as he can.

However, he need surely have no inferiority complex about using the English ones while he learns the others. Here I am bound to say that there is too often a superiority complex displayed by many older collectors. I see no justification for this whatever but it certainly exists—go to any Society Meeting where there are plenty of Olders and Youngers and it will be there all right. That's not fair; after all, even the most illustrious Older started off with Puff-Puff, graduated to Puffer-Train, then advanced to Engine and may now say Locomotive, whereas the Younger may clearly understand one of the modern organic chemistry formulae which could still be "Greek" to the Older!

So we've all had our problems, human and obvious ones too, and a gracious understanding of a youngster's position is what is wanted to bring support and brain into our hobby or life's work, whichever it may be. Our ranks want enlarging and young people who are interested don't want to feel they are being kept out of a Secret Society by ritual magic.

But before we forget—my solution to the problem. It was this. In my collection itself I put only the Latin names and never had an English name among the specimens. As the young collector does, I used to gloat

over my captures very frequently, and by having nothing but the Latin names below the specimens I learnt them quickly and accurately. The earlier you start the easier it is, as you have fewer specimens. Thus you learn an extra one each time you catch a new species. You probably name it first from 'South' and you look up among the English names: but—write your label in full in Latin only and it won't be long before you're quite at home with them all. It's the simplest solution I've come across so far.

And if you still forget one?—look it up, like everyone else does!

Thoughts on Setting Lepidoptera

BY AN OLD MOTH-HUNTER.

Setting is an appalling waste of time; therefore the minimum amount of time should be spent upon it. From the point of view of pure science it matters not at all whether a lepidopteron be "well set" or "badly set": all that the entomologist requires is that the body, wings and appendages of a dried specimen shall be displayed in such a way as enables him to examine them to best advantage. He must be able to handle the specimen: therefore there must be a sufficient length of pin, above and below, for him to hold the specimen, surely and conveniently, by fingers or forceps. Each of the four wings must be spread out, flat, in such a way that every part of each wing may be readily and conveniently examined, above and below, with a magnifying glass. The whole of the body—head, thorax, abdomen—must be fully exposed, above and below and, so far as is possible, on each side. The antennae must be porrected, and in the same plane as the wings. The underside of the head must not be masked by one or both of the fore legs. The legs must not be adpressed to the body but must stand out from the thorax sufficiently for all the surfaces of at least one of each of the three pairs of legs to be examined with a lens.

A counsel of perfection? Doubtless; but perfection should be the aim of everyone who practises an art or a craft or, if he be a scientist, a method. I don't know what is the experience of the museum men but in all the private collections of British Lepidoptera which I have seen all the above canons have been observed, closely in some, with laxity in others; I have rarely seen a cabinet specimen which could not be examined with sufficient thoroughness to satisfy the demands of science. The reason is, of course, that we all set out our moths, at least as regards wings and antennae, the same way. That some collectors set the forewings so far forward as would result in a tearing of the alar muscles in the living insect, while others align the costae of both forewings, does not matter at all: both methods facilitate examination by the scientist. The outward appearance of the set specimen is a matter of aesthetics: a sense of the 'fitness of things' deters us from setting one forewing noticeably farther forward than the other, one antenna aligned with the body and the other with the costa of a forewing: specimens set like this we should call 'cock-eyed,' a term of disapproval.

Yet I am not one of those who hold that setting is not of any importance, that so long as the canons listed in my first paragraph are observed it does not matter at all *how* a moth or a butterfly is set.

In common with the great majority of my fellow men I hold that "what's worth doing is worth doing well." Slovenly work is the hallmark of the sloven. If we cannot set our captures well, that is to say if practice does not make us perfect setters, we ought to employ adventitious aids, such as ruling fine black lines, three-sixteenths of an inch or so apart, transversely across our setting-boards; painting our setting-boards black or green; and so on. For nobody will dispute the assertion that so far as a collection *qua* collection is concerned perfect uniformity in the setting of each series goes a long way towards earning praise by beholders. It is only a collection of perfect specimens perfectly set that can earn the encomium "splendid"; and which of us would not like our collection to be called that?

Now this preamble has been evoked by Mr. W. E. MINNION's note in our last issue (page 184) in which he queried the use of setting-blocks as opposed to the common-or-garden setting-board. Never in my life have I used setting-boards so I know none of their virtues; but I have often watched my entomological friends setting insects upon them. A cumbrous, tedious, time-wasting job it has always seemed to me. If there are twelve specimens on a board the first one set will have been endangered twelve times—a careless movement of the hand, a brush of the sleeve—by the time that the last specimen has been set. And what an unwieldy thing is a piece of board with twelve insects upon it. And how accuracy must be jeopardised by generations of pin-pricks in the cork of an old setting-board. And what splendid hidey-holes for mites does each pin-prick become. Every time one of the twelve insects is removed all the others are in peril. It has always been a marvel to me why such a primitive method has survived.

With the block method of setting there is none of these disadvantages; setting is as simple as can be; only one insect is endangered at any time; and, best of all, double the number of specimens can be set in an hour. If you want to show a specimen to a friend, only that particular specimen need be taken in hand—and how much safer to handle a single block than a cumbrous piece of board a foot and more long with a lot of insects on it and pins sticking about all over the top side. If you want to exhibit a rarity recently set to your local nat. hist. soc. you can wedge the block into a pocket-box and transport it with complete safety. Would you dare to do this with a setting-board having a dozen insects on it? Drying is more rapid since the wings are not covered with waterproof paper or cardboard braces; there are no pin-pricks in the blocks; the blocks last for ever and not having any paper on them never need repapering or cleaning. And since one makes the blocks oneself out of any old wood that comes in handy they cost practically nothing at all. The time wasted in picking out, from a mixed bag taken at sugar, twelve insects the same size so that one can fill one board at a time does not occur with blocks: at one's side stands a box with divisions in it, each division containing blocks of a certain size, so that one can set a 'Pug' immediately after setting a Clifden Nonpareil. I know of no single advantage which the setting-board has over the setting-block, but a good many which the block has over the board.

The blocks are quite simple to make. Suppose you want to make 40 blocks of a size suitable for species ranging from *Polyommatus icarus*

to *Antitype flavicincta*. Take a length of wood 4 ft. 7 in. long, measuring $2\frac{1}{8} \times \frac{7}{8}$ in. Plane it down to 2 in. $\times \frac{3}{4}$ in. With a grooving plane cut a slot along it $\frac{1}{4}$ in. wide and $\frac{1}{2}$ in. deep. Then cut the length up, with tenon saw or circular saw, into $1\frac{3}{8}$ in. blocks. Cut strips of cork from table mats or sheet cork and glue these strips on to the bottom of the slots. Sandpaper to make all smooth.

One can use any common wood—deal, white pine, etc., or one of the many foreign woods used nowadays for crates and stout packing-cases.

For 'Pugs' and Micros I cut $1\frac{1}{4}$ in. blocks from a strip of oak $1\frac{1}{2}$ in. wide $\times \frac{3}{8}$ in. thick. The slot should not be more than $3/32$ in. wide. Blocks smaller than this would, in my hands, be unsafe. If made of a softer wood than oak they would be apt to break in half at the slot: of oak they are everlasting, and their weight adds stability.

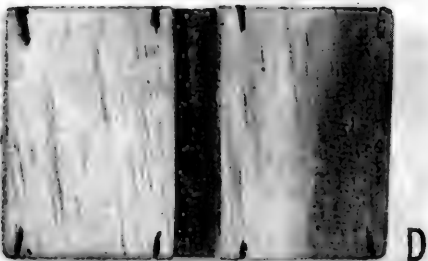
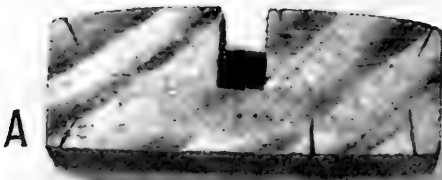
For the material which one winds round the blocks to keep the wings in position I always use a soft silk-and-wool mixture called Paton's 'Halcyon' Knitting, 3-ply. One can obtain it at any wool shop. For 'Pugs' and other small fry a reel of sewing silk, such as Dewhurst's

EXPLANATION OF PLATE IX.

- A. End view of block, showing cork (black) in slot, and notches for holding free end of wool.
- B. The same, showing how wool is fixed to block and how the first turn should be made.
- C. Underside of block, showing notch and hole for fixing wool to block.
- D. Upperside of block, showing notches at either side of the slot to keep first two turns of wool in position (see Fig. E).
- E. The same, showing first two turns of wool over wings, also how abdomen is supported.
- F. Completed setting. Note how free end of wool is fastened at bottom right-hand side.
- G. Setting-house, showing perforated zinc on door and at back, and method of supporting trays. At the back of the third and bottom tray can be seen the rim to prevent blocks from falling off when trays are pulled out. Note the 'feet' under bottom of setting-house.

'Sylko' Three Shells Silk Substitute Machine Twist 40, is perfection. Cut a notch in one of the bottom edges of the block, below and a little to one side of the cork, as shown in Figs. A and C, and with a bradawl make a shallow hole on the underside of the block where the notch ends, as in Fig. C. Make a knot in one end of your wool and press the knot into the hole. Then take 6 turns of the wool round the right-hand side of the block and 6 turns round the left-hand side, and break off the wool. That's all there is to it: the accompanying illustrations explain everything else.

With butterflies and Geometers one can blow the wings flat on to the block; then wind a single turn of wool round them, and with a setting-needle in one hand raise the wool while, with a similar tool in the other, you push the wings into the required position. *Wind the wool lightly*: if it is at all tight it will leave a mark on the wing: with 'Halcyon' knitting wool the lightest of winding is sufficient to keep the wings in position. Don't use reel-cotton: modern processing methods make it much too hard for our purpose. If you have to set Drinkers and Oak Eggars before you have become proficient put a piece



of paper over the wings when they are in position and wind the wool over that.

Support the abdomen with a small strip of white pasteboard (old postcards are just the thing) transfixed by a pin, as shown in Fig. E. To do this, slide the pasteboard strip on to the cork under the abdomen. Transfix it with a pin. Then with your flat-nosed forceps push the pasteboard up the pin.

I used to make these blocks during the winter and had about a thousand at one time, in the never-to-be-forgotten days when I went sugaring and pupa-digging and kept some thirty larva-cages in commission. If you prefer the wings of your specimens to have a slight camber (as I do) you must plane the length to the required camber before you cut it up into blocks.

The blocks with insects on them are stored in 'setting-houses,' one of which is shown in Fig. G. These are wooden boxes of a convenient size which you have obtained from your grocer. They are stood on end and the lids are hinged. These lids (which thus become doors) must consist largely of perforated zinc. The backs also (original bottoms) each have a central strip, an inch wide, of perf. zinc from top to foot. In Fig. G I have removed some of the trays to show this. Thin strips of wood are tacked across the sides, as shown in the picture, to support trays of 3-ply or other thin wood (I made mine from old orange-boxes).

The back of each tray must have a rim tacked along it; otherwise the blocks may fall off when you pull out the tray.

Any questions?

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Scoparia pallida Schiff. does not seem to be taken much to-day: several advanced collectors have recently told me they cannot get it. I have, however, found it almost everywhere I have collected where there is a fresh water swamp. It is almost impossible to take in the daytime, but at late dusk it flies low over wet ground where there is a short growth of sedges, wild mint, etc., and later it will come to a strong light. I took it at Gravesend, Sittingbourne, Faversham, and Deal when collecting there; it is also found in the Southend district, and is common in Broadland. At Barton I took a form I have never seen elsewhere, with radiated dark markings all over the forewings, like the underside of *L. palealis*.

Cynaeda dentalis Schiff. is of rather secretive habits in the daytime and may easily be overlooked, as except for an odd specimen it is difficult to disturb before late dusk. When I lived at Faversham there was one locality which I never worked late owing to transport difficulties, which was filled with Viper's Bugloss. Although I worked this place regularly I never saw *dentalis* there until I had been visiting it for four years, when on a hot thundery evening the moth decided to fly furiously. I caught about a score and could have taken many more had I wished but never saw it there again until I visited the place at night by car,

when I saw it on top of the flowers about an hour after dark. *Dentalis* can always be found where it occurs by looking at the *Echium* flowers with a torch after dark, when it looks conspicuously pale. I fancy it is found everywhere in Kent where *Echium* grows; I have seen it on the North Downs at Cuxton and Snodland, and also at Sittingbourne, Faversham, Whitstable, Margate, Deal, Sandwich and Dymchurch, and think it is generally distributed also in East Anglia.

Dioryctria banksiella Rich. is difficult to net by day, as it sits near the edge of the cliffs on which its foodplant grows and has an aggravating habit of dropping over when disturbed and alighting lower down. However, it flies naturally at early dusk and is then easy to get by climbing to a safe grassy ledge and waiting for it to buzz along, when it may be netted and boxed. It is pretty common where it occurs; I took a score in one evening on a ledge on the Dorset coast in 1936. It was rather eerie work as beyond the ledge, which was wide and easily accessible, there was a straight drop of over a hundred feet into deep water, at the same time it was very interesting to see the puffins going in and out over the sea below. I suggest wives are best left at home on such an expedition, though a street crossing is probably more dangerous.

The first week in July is the best date in a normal year for the first brood of *Trichoptilus paludum* Zell. This delicate insect is probably found on most boggy heaths in Southern England where sundew grows, although it is often overlooked. It seldom flies by day but may easily be disturbed in the early evening when it requires a sharp eye to distinguish it from gnats. It rises two or three feet, flits a yard or so, and drops back to settle on a grass stem or sedge. In addition to the Surrey localities it is to be found in suitable places throughout the New Forest, on the Studland peninsula, and in Dorset generally.

Margarodes unionalis Hüb. comes to light occasionally in August and September. A female will probably lay readily in confinement and the resulting brood can be reared, if kept warm, on jasmine. The female can easily be distinguished from the male by the absence of the large tuft of white scales at the end of the abdomen.

The larva of *Loxostege palealis* Schf. can be found from the middle to the end of August nearly full grown in the umbels of *Daucus carota*. The moth has now been established for many years in South Kent and around Southend (Benfleet, etc.), where it is possibly reinforced by migration. Get a large flower-pot, a foot across if possible, put in good drainage and several inches of light soil, put the umbels in, tie a piece of cloth over the top, and leave out in all weather in the open. By this method about 100 per cent. will be bred. If brought into the house or put under cover for the winter nearly the same percentage will die. *Palealis* is said to go over more than one winter on occasion as a full grown larva, being thus eighteen months in a cocoon in the larval stage before pupation. Probably this is unusual from unnatural conditions in captivity. I have never had it happen with over 100 larvae.

The larva of *Gymnancycla canella* Hüb. can be found in late August on Prickly Saltwort (*Salsola kali*) and can very easily be reared by grow-

ing the plant in a pot or tub full of sand. When full grown the larva goes just below the surface of the sand and spins a cocoon where it pupates at once, remaining as a pupa till the following July. The pupae may be collected from the pot at the end of September and kept in a tin box in a cool place till the following June with perfect safety.

The dates given in Tutt's *Practical Hints* for *Dioryctria hostilis* Steph. are too late. The larva may be found in a rolled leaf of aspen, or sometimes two or three in a small bunch of leaves, from the middle to the end of August. As it is easy to rear, it is better to go in the third week and take it small, as in an early year it is sometimes gone at the end of the month. It spins readily in moss and pupates at once and can be kept without difficulty through the winter. This moth, though its numbers vary from year to year, is much more generally distributed than is usually supposed. It is probably to be found in every aspen wood of size in mid and East Kent, and in several places in South Essex.

The second brood larvae of *Amblyptilia punctidactyla* Haw. (? *cosmodactylus* Hüb.) should be worked for on *Stachys sylvatica* in the last week of August. Numbers of *A. acanthodactyla* will probably be found at the same time, but it is my experience that the earlier larvae, where both are found, will have a higher percentage of *punctidactyla*. Larvae taken at Seaton and Yarmouth, I. of W., in mid September contained two *punctidactyla* each in batches of forty from each place, whilst a batch of 30 from Devon taken in mid August were all *punctidactyla*. The larva and pupa are not very easy to see as their pink and green colours harmonize well with the flowers and stem of the *Stachys*.

Current Notes

In *Entomologisk Tidskrift* (1952, 73: 13, text figs.) Arvid Horke describes a new noctuid, *Hydraecia nordstroemi*, which he has taken at light in the island of Oeland, S. Sweden. It resembles *H. micacea* Esper very closely, but is on the average smaller and the shadow inside the elbowed line is dark chocolate brown, not reddish. Its date of appearance, the middle of July to the beginning of September, is earlier than that of *micacea*. In Oeland the latest date for *nordstroemi* is 4th September and for *micacea* the earliest is 3rd September. He also describes a melanic form, ab. *fuscata*.

The genitalia show constant differences in both sexes, and by brushing off some hairs the males can be distinguished easily from those of *micacea*. The cucullus in *micacea* is furnished with a distinct corona and the strongly chitinised harpe is turned backwards and crosses the lower angle of the cucullus; in *nordstroemi* the corona is lacking and the harpe is separated from the cucullus, parallel with its posterior edge and projecting at right angles beyond the lower edge of the valve. The chief difference in the aedoeagus is that in *micacea* there is a bulbous cornutus, which is absent in *nordstroemi*.

Since these two species have been confused up to the present time the distribution of *nordstroemi* is not yet known and it is possible that it occurs in the British Isles. I have examined the few specimens of *micacea*

ab. *brunnea* Tutt in the Rothschild-Cockayne-Kettlewell collection, but they are all true *micacea*.

Another new noctuid, *Allophyes alfaroi* Agenjo, which is found all over the Iberian Peninsula, is described by R. Agenjo in *Eos*, 1951, 27: 410-414; Pl. 6, fig. 1; Pl. 7, figs. 3, 6, 7, 8. It bears a close resemblance to *Allophyes oxyacanthae*, with which it has been confused hitherto. It is a little smaller than *oxyacanthae*, more variegated, and has the white mark near the inner margin broader and more conspicuous, and the antenna of the male has shorter pectinations. The male genitalia are much less asymmetrical in *alfaroi* than in *oxyacanthae*, the bifid uncus is much smaller, and the shape and size of almost every structure differs. The bursa copulatrix of *alfaroi* is nearly twice as long as that of *oxyacanthae*. *Prunus spinosa* is the food-plant. It is unlikely to occur in the British Isles, but, if it is found, the South of Ireland is the most likely locality.

A meeting was held at the rooms of the Royal Entomological Society of London, on Wednesday, 12th March (see *Proceedings C*, Vol. 17, No. 2, 4th March), at which, in response to a request from Professor Grassé and others, the proposal to form a British branch of the U.I.E.I.S. (Union Internationale pour l'Etude des Insectes Sociaux) was discussed. I have agreed to act provisionally as Secretary, and would be glad to hear from any British biologist who would like to join such an organisation. If the necessary response is received, steps will be taken to put the organisation on a permanent basis and to nominate Officers.—J. D. CARTHY, Queen Mary College, Mile End Road, London, E.1.

Will those of our subscribers who take in the *Record* on a half-yearly basis please send their subscriptions for July-December (ten shillings) to our Treasurer now—thereby saving him the trouble, and postage, of sending out 'reminders'? An Order Form is enclosed with this issue.

Notes and Observations

ALLEGED CAPTURE OF LEUCODONTA BICOLORIA SCHIFF. IN HAMPSHIRE.—In the Note on page 151 of this volume of the *Record* there is a passing reference to the capture of *L. bicoloria* on Hayling Island. Probably this was a case of mistaken identity. Some years ago I had brought to me a specimen of *Euproctis similis* Fues., proudly exhibited as *bicoloria*, and was unable to convince the captor of his error. The Portsmouth district has been well worked for many years by three active entomologists, and none of us has ever seen *bicoloria*, though that proves nothing. I saw a specimen of *L. bicoloria* in an old collection made at Gosport many years ago and was informed it was a genuine English specimen. I believe it is still in existence. But so many old collections contain queer things. Newman either did not know of the Hayling Island *bicoloria* or did not accept the 'record', as there is no mention of it in his work *British Moths*, pp. 227-228.

I think it should be a rule among entomologists that no record should stand unless the insect has been seen by at least two entomologists or the captured specimen has been exhibited. This, I am given to under-

stand, is the rule in the world of ornithologists. Otherwise I might be tempted to divulge an almost certain new locality for *Trachea atriplicis* L., but the specimen eluded me, though I had it in view for at least ten minutes!

Finally, with reference to the Hampshire and Isle of Wight List of Macro-lepidoptera, *Euxoa cursoria* Hufn. should be deleted as occurring on Hayling Island. The author of the 'record' has since admitted it was a case of mistaken identity.—A. H. SPERRING, Slindon, Fifth Avenue, Warblington, Havant, Hants. 28.v.52.

RECORDS OF *LEUCODONTA BICOLORIA* SCHIFF.—With reference to the reported occurrence of this species on Hayling Island (*Ent. Rec.*, 64: 151) the following notes may be of interest. (1) A live specimen was brought to Mr. W. Edwards at Malvern: it had been found at the New Pool, a large pond surrounded by alders. This is recorded in the Victoria County History of Worcestershire and must have been subsequent to 1899 as it is not mentioned in the local list of Malvern Lepidoptera compiled by W. Edwards and R. F. Towndrow and published in that year. (2) About fifteen years ago I was told by an entomologist in the New Forest that when he and a friend were out collecting on the East Dorset heaths they had been accosted by a working man who offered them a box containing an assortment of about 200 pupae for half-a-crown. He said he had dug them locally himself. Rather reluctantly, and chiefly because the man seemed really hard up, they made the purchase and divided the pupae between them, thinking they had picked up a lot of rubbish. To a very large extent this was true, but among the insects that emerged was one *Leucodonta bicoloria*. (3) Six years ago I was shown a small box of insects mainly in poor condition at Brockenhurst and this contained one *L. bicoloria*. I was assured that it was a genuine British specimen, a statement that I have no reason to doubt, but unfortunately there were no data with it.—H. SYMES, 52 Lowther Road, Bournemouth. 15.v.52.

CARTEROCEPHALUS PALAEMON PALL. IN HAMPSHIRE.—Mr. Allan's note on *C. palaemon* (*Ent. Rec.*, 64: 151) made me look up some records which I made in 1934-5 when at school at Winchester College:—"This insect has occurred in the New Forest but does not now. Its chief localities are in the Midlands. They were taken by Mr. Johns (of Winton House, Winchester) near Lyndhurst many years ago. I have seen the specimens and know that they are *palaemon*, but I am certain it does not occur at Lyndhurst now."

So far as I remember, Winton House was a prep school near Winchester, and I have quite forgotten Mr. Johns. I did not know him well but I do remember calling one day and being shown the specimens of *C. palaemon* and being told where they came from.—(REV.) P. C. HAWKER, Gautby Rectory, Wragby, Lincs. 15.v.52.

CARTEROCEPHALUS PALAEMON PALL. IN HAMPSHIRE.—With reference to the query (*Ent. Rec.*, 64: 151) regarding the capture of *C. palaemon* by Mr. Moncreaff at Southwick, Hants, I send you the following information. Moncreaff was a well-known Portsmouth naturalist and specialised in Botany and Entomology. He was a prominent member of the late Portsmouth and Gosport Natural Science Society, but I cannot

trace that any of his collected material is still in existence, if indeed he ever made a collection. He was always regarded as an accurate observer, and it is most improbable that he ever had foreign insects as his work was connected with the Portsmouth district. If therefore his identity with the "Mr. Moncreaff" who is said to have taken *C. palaemon* at Southwick is correct, the specimen was probably genuine.—A. H. SPERRING, Slindon, Fifth Avenue, Warblington, Havant, Hants. 28.v.52.

CARTEROCEPHALUS PALAEMON PALL. IN HAMPSHIRE.—With regard to Mr. Allan's query in *Ent. Rec.*, **64**: 151, *Steropes paniscus* [*palaemon*] was recorded by R. Harvey in 1857 in *Ent. Weekly Intel.*, **2**: 117. It is definitely Netley in Hampshire and not the one in Shropshire associated with the founder of the Hope Department. Henry Moncreaff lived in the High Street, Portsmouth (see 1881, *Ent. mon. Mag.*, **18**: 56). See also Notes by him in *Entomologist*, vols. 3, 4, 5, 6 and 7. There is also a note in the *Zoologist* about this period.—B. M. HOBBY, 7 Thorncliffe Road, Oxford. 20.v.52.

[Much obliged to our correspondents for their information. Henry Moncreaff contributed to *Entomologist* between 1867 (when he gave his address as "Southsea") and 1874, when he was living at "145 High Street, Portsmouth". Robert Harvey is in the list of British Entomologists printed by H. T. Stainton in *The Entomologist's Annual* for 1860, his address being there given as "5, Portland Terrace, Southampton". I do not possess a copy of *The Entomologist's Weekly Intelligencer*, vol. 2, and have been unable to borrow one in time for this note. If any reader has that volume I should be grateful for a copy of the entry quoted by Dr. Hobby, also for any further information about Robert Harvey. Does anybody know more about Mr. Johns of Winton House, Winchester, and what became of his collection?—P.B.M.A.]

VANESSA CARDUI L. IN LINCOLNSHIRE.—On 8th May I saw a very worn specimen of *V. cardui* in our churchyard here. A strong East wind was blowing at the time. The first specimen of *Gonepteryx rhamni* L. that I saw this year was on Easter Day (13th April), which leads me to believe that all butterflies are much later here than in the south.—The REV. P. C. HAWKER, Gauthy Rectory, Wragby, Lincs. 15.v.52.

VANESSA CARDUI L. IN DERBYSHIRE.—On 10th May I was pleased to see a small pale specimen of *Vanessa cardui* L. in flight over the stone walls which border Long Lane, Stonedge, about 3 miles S.W. of Chesterfield. It was a male in good condition. Long Lane is 900 feet above sea-level and quite unsheltered. I have found *V. cardui* in the same spot in other years.—J. H. JOHNSON, 53 Knighton Street, Hephthorne Lane, Chesterfield. 19.v.52.

VANESSA CARDUI L. IN TURKEY.—It was with great interest that I read Brigadier Lipscomb's account of the emergence on a grand scale of *Vanessa cardui* in North Africa, in which he shrewdly foretold a big emigration to England. Apart from the entomological papers, there have been numerous letters in *The Field*, and perhaps other papers, reporting very early occurrences of *V. cardui* in different parts of south England.

The emergence and movement must certainly have been on a vast front, for they came up through the Bosphorus too. We had a very

erratic spring and early summer here, a few hot spells interlarded in a long cold term that lasted—to our misery—to the end of May. The storks arrived in arctic weather in mid-March, but a mild day on the 14th produced *Vanessa io* and on the 24th *V. polychloros* and *V. antiopa*, which is not a very familiar species here. After another bleak spell *V. cardui* put in its appearance in my little garden at Bebek on 5th April, stunted and very weather-beaten. In spite of icy winds out of Russia, chilled by the melting ice, *V. cardui* continued to pass through, but most were so worn and bleached that they were hardly recognizable on the wing. This must be all part of the same movement, but they seem to have been later here than in the west.—MALCOLM BURR, D.Sc., Aynalicesme caddesi 51/2, Istanbul. 7.vi.52.

NOTES FROM HERTFORDSHIRE.—Some at least of the *Vanessa cardui* recorded in March and April survived the cold spell which followed their immigration. I noted specimens at valerian here in my garden on 23rd May and 18th June, others in the neighbourhood on 16th and 22nd June. One was seen in the New Forest on 3rd June. On 13th June I found a newly emerged larva here on *Onopordon acanthium*. *V. atalanta* was in my garden on 19th and 23rd June, and in Sussex one was seen on 27th May.

Sugar has not yet been productive, the most noteworthy species being *Ceramica pisi*, *Dypterygia scabriuscula*, *Apamea charactera* (*hepatica*) and several *Polia nitens* (*advena*).—C. CRAUFURD, Denny, Galloway Road, Bishop's Stortford, Herts. 27.vi.52.

A NOTE ON MALACOSOMA NEUSTRIA L.—I should like to add a postscript to Mr. David Wright's very interesting notes on *Malacosoma neustria* Linn. (*Ent. Rec.*, 64: 172). In 1950 I obtained a web of larvae. During the first week of July nine ♂♂ and thirty ♀♀ emerged, the remaining cocoons being placed in the garden as sufficient imagines had been secured. The interesting point is that every emergence occurred between 3.30 and 5.30 p.m. G.M.T.—PAUL H. HOLLOWAY, Warwick House, Fair Oak, Eastleigh, Hants. 18.vi.52.

MACROGLOSSUM STELLATARUM L. IN HERTFORDSHIRE.—In the afternoon of 18th June a *Macroglossum stellatarum* Linnaeus spent ten minutes feeding at the flowers of sweet william in my garden. I watched it from a distance of two feet and noticed that it was faded and the anal tufts were imperfect.—E. A. COCKAYNE, 8 High Street, Tring.

[One was also seen feeding at sweet william in my garden at Bishop's Stortford on 19th June. Mr. C. Craufurd of this town saw specimens at valerian in his garden on June 17th, 18th and 23rd. We shall be glad to receive records of this insect from other parts of the country.—P.B.M.A.]

ANOTHER FOODPLANT OF TATHORHYNCUS EXSICCATA LEDERER.—Dr. J. Sneyd Taylor has written to say that he bred a specimen of *Tathorhyncus exsiccata* in January 1942. The larva was found feeding on lucerne, *Medicago sativa*, at Graaf-Reinet, Cape Province, and the cocoon was formed among leaves and debris at the base of the food-plant. The adult was determined by Dr. A. J. T. Janse as *Tathorhyncus vinctalis* Walker, a synonym of *exsiccata* Lederer, and a note was published in the *Entomologist's Record*, 1942, 54: 112.—E. A. COCKAYNE.

INCIDENCE OF ODONTOSIA CARMELITA ESP.—I was interested to read (in your letter) that you consider *O. carmelita* a scarce insect, because Mr. Goater and I have taken it for the last three years, and more this year than before. But we have thought it very aptly named, as although it occurs in many places near here we have never taken more than two specimens in one night and in all not more than a dozen. It appears to fly in bad weather, for we have taken it in the pouring rain and when there has been a ground frost sufficient to prevent most other things from flying.—A. C. R. REDGRAVE, 14a The Broadway, Portswood, Southampton. 4.v.52.

HETEROGENA ASELLA SCHIFF. IN KENT.—The late A. J. L. Bowes noted two males of "The Triangle" (*H. asella*) at light at Ham Street; one on 18th June 1934 (lost), the other on 30th June 1935 (taken). At Ham Street in 1951 three were seen by me at light and were taken. The dates upon which they occurred are as follows:—25th July (♂), 30th July (♀), 31st July (♀). So far as I am aware these constitute the only records of *asella* for Kent.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 5.vi.52.

PLUSIA VARIABILIS PILL. & MITT. (ILLUSTRIS FAB.) FROM THE HAYNES COLLECTION.—With reference to my note in *Ent. Rec.*, 64: 52, I wish to say that I have received no confirmation of the authenticity of the two specimens there mentioned and which were purchased by Mr. H. D. Bessemer at the Haynes sale.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 5.vi.52.

EARLY EMERGENCE OF ABROSTOLA TRIPARTITA HUFN.—A specimen of *Abrostola tripartita* Hufn. visited my light-trap on the night of 1st-2nd May. South (*Moths of the Br. Is.*, 2: 75) gives "June, sometimes late May, and, when there is a second emergence, in August". Newman & Leeds give June and July. I have bred it from late Summer larvae several times and have never had an emergence before 15th June, most being in the last days of June and early July. In 1947, however, in Essex, I obtained larvae in late June which produced moths on 17th July and 20th July; this suggests that there were early emergences in that year.—F. H. LYON, Sampford Peverell, Tiverton, Devon. 17.v.52.

HADENA BOMBYCINA HUFN. (GLAUCA HÜB.) AT WESTON-SUPER-MARE.—It may be of interest to record the capture of a specimen of the above species in my garden at light on the 23rd May last. Another specimen was taken on the following day and a third specimen a few days later. On looking through my series of *Hadena nana* Hufn. (*dentina* Esp.) I find that there is a specimen of *H. bombycina* among them taken in May 1933 by my father in this garden. Weston-super-Mare seems to be rather a strange locality for this species which generally occurs in the north of England in mountainous areas. I have, however, heard indirectly that at least one other specimen of *H. bombycina* has been taken in Somerset this year by another collector.—C. S. H. BLATHWAYT, 27 South Road, Weston-super-Mare. 11.vi.52.

BUTTERFLIES ON WET GROUND.—In *Ent. Rec.*, 64: 87, two short notes appeared relating to butterflies observed on wet mud. In the tropics and subtropical regions, this is, of course, a normal occurrence on warm

days, especially around noon and during the earlier hours of the afternoon.

A large number of species have this habit, but in this country (Argentina) as a rule the great bulk of these assemblies are composed of *Papilios* (especially the black and yellow species of the *Papilionini* and often large groups of the beautiful white semi-transparent species of *Lampropterini*), species of *Phoebis* and *Aphrissa statira*, of the *Dioninae* subfamily of the *Heliconiids*, *Diaethria candrena* and a few species of *Hesperiidae*, especially *Pyrgus* and in the afternoons *Telegonus lividus* and certain *Phocides*.

These assemblies as a rule consist of from a few individuals to perhaps a hundred or so, but I shall never forget one I was privileged to see afternoon after afternoon when collecting some years ago alongside the river Uruguayí in the virgin forest behind Puerto Bemberg in Misiones. Here an intake was being constructed in connection with a new water service for Bemberg and a small earthen ramp had been built to hold back the water from the excavations. This ramp was quite small, perhaps a dozen yards long by one wide, and as it had been trodden hard by constant use and was only a few inches above water level, it was always damp and an ideal place for these drinking butterflies. Furthermore it was probably the only damp mud anywhere in the neighbourhood as the river banks were of rock, and it lay in a veritable suntrap and was easily accessible by way of the river, here some eighty yards wide. In this spot the butterflies assembled daily in such incredible numbers that if I were to suggest a total of around ten thousand, I do not think I should be in any way exaggerating. The photographs I took, though poor, give some idea of this great concentration. A large kite net swept over them as they rose, trapped anything up to thirty or forty or even more specimens as I more than once proved, liberating the catch after they had been counted. These butterflies were mostly of the species I have already mentioned, but there were always about a dozen others represented in smaller numbers.

A curious thing about these assemblies is that under normal conditions all the specimens will be found to be males. Writers have occasionally recorded seeing females, generally not in excess of two or three per thousand, but I suspect that their presence was accidental, nor do the authors state whether these specimens were actually engaged in drinking. Except in the case of a few *Ascia monuste* females noted drinking at roadside and street puddles when they came down to feed during the prolonged migratory flight of this species that took place during the past summer and which lasted for well over two months (and which will be dealt with in another place), I have never found females attending these *Drinkfeste*, although I have searched for them many times. In the case of di- or polymorphic species, their absence or presence can easily be noted by glancing over the groups, but to determine the presence or not of females in species where the two sexes do not differ, I have on many occasions sat down by side of an assembly, and picking up the specimens one by one with a pair of forceps, satisfied myself as to their sex.

They rise when alarmed, but if one remains quiet or even sits down in the spot where they have assembled, they settle again and return to their drinking within a very few minutes.

Another peculiarity is that when any considerable number of a given species is present, these will form compact communal groups by themselves, and when there are several such groups they will remain slightly apart and the species with few representatives will be found widely scattered on the outskirts of the main concentration. They remain almost motionless for long periods, sucking up the moisture and every few minutes discharging a large drop of fluid. They sometimes bunch together so closely that their raised wings almost touch those of their neighbours.

There is a theory that butterflies are only found on damp sand or soil where this has been contaminated by human or animal discharge or sweat. It is a theory difficult to prove or disprove, since it is often quite impossible to say that such and such a spot has *never*, within a reasonable period, been soiled, or that some animal has not recently lain there. Urine or fecal discharge, although all trace has long since vanished, may leave some residue in the soil that for a very long period afterwards will affect the spot where it has taken place when this becomes moist. With respect to dung, I may add that in the forest this generally disappears completely overnight, carried away during the hours of darkness by beetles, so that no trace remains the following day.

In support of this theory I may add that I have never seen butterflies on wet ground in any place where I could state categorically that no contamination could have ever taken place, and that it has been my experience that the largest concentrations and the most frequently selected sites have always been those spots where contamination is evident or where no doubt exists as to its having occurred within a reasonable time of the place being made use of by the butterflies. I have seen butterflies collected together on sweaty clothes thrown over a bush to dry, on the handles of the paddles of native dugouts, on spilt fermenting substances where boats have been unloaded on the river banks, and often when sitting quietly by some forest stream watching one of these assemblies, butterflies have left the wet sand to settle on my perspiring hands and face.—KENNETH J. HAYWARD, Institute of Entomology, Tucumán University, Argentina.

THE CHROMOSOME NUMBER OF *LEUCANIA FAVICOLOR* BARRETT AND *LEUCANIA PALLENS* LINNAEUS.—The late Sir John Fryer, believing as I do, that these are distinct species, thought they might have different chromosome numbers and decided to try to find out. I went with him to stay for a week-end with his sister at Margaretting and at night we went to Creeksea. *Favicolor* was common and we both kept females and obtained eggs. Fryer had obtained eggs of *pallens* already. Testes of both species from larvae in the last instar were fixed and sections cut by a skilled technician in his laboratory at Harpenden. When these were ready I went to stay with him for a week-end at Harpenden and under an oil immersion lens each of us counted the chromosomes of both species independently. Both of us found the number to be 31 in the great majority of counts in both species. Both had counts of 30 in two or three cases probably owing to the two chromosomes touching one another having been counted as one, and there were one or two counts of 29 and 32, but we felt satisfied that the number is the same in both

species. The result was disappointing, but this negative result does not prove that *favicolor* and *pallens* are the same species. Many of the large hawk-moths have the same chromosome number. Fryer intended to publish the result, but pressure of work prevented him, and I think the time has come when it should be recorded.—E. A. COCKAYNE, 8 High Street, Tring.

POSSIBLE SEX-LINKAGE IN *LAOTHOE POPULI* LINNAEUS.—In *Laotloe populi* there is a whitish grey form often with a faint yellowish tinge, usually with ill-defined markings, ab. *pallida* Tutt. If I have identified Tutt's form correctly the females are much yellower than the males and are a pale putty colour. There is also a pale pink form with markings more or less indistinct, but darker pink or, as Tutt puts it, pale foxy red. These are named according to the depth of colour, ab. *rufodiluta* Tutt, ab. *rufa* Gillmer, and ab. *fuchsi* Bartel. I have seen large numbers of these pale putty coloured and pink forms and apart from some bred by L. W. Newman all have been females.

Newman for some years had a very inbred strain, which produced gynandromorphs and many beautiful pale forms, those belonging to the pink forms being especially beautiful. Most of them were female, but he also bred a small number of males and obtained some unusual modifications without markings or with only the slightest trace of them. I collected all the males I could find in various collections and a few I had bred myself from pupae supplied by Newman, and have 10 pale grey males, 10 pale pink males, and 4 with a slight pink tinge. I have also 3 ♂ and 2 ♀ of the modification without markings. All these were bred by Newman or from pupae obtained from him. It seems to me very probable that all these forms are sex-linked recessives and that two main genes are concerned.

All the specimens I have seen, whether captured, bred from wild larvae, or in the F1 generation are female, and the great majority of those that appeared in Newman's inbred strain also are females. In contrast with this very few males are known, and those I have seen all originated from Newman's inbred strain. The occurrence of two or three gynandromorphs, grey on the male side and pink on the female side, is quite compatible with sex-linkage, and the other facts I have given strongly suggest that both ab. *pallida* and the pink forms are determined by recessive sex-linked genes. This can only be decided by experimental breeding, and ab. *pallida* should not be difficult to obtain, though there might be difficulty in procuring the pink forms. It is desirable that the work should be done, because sex-linked forms are rare in Macrolepidoptera, the best known being the classical case of *Abraxas grossulariata* ab. *dohrnii* Koenig (*lacticolor* Raynor), which is recessive, *Gonodontis bidentata* ab. *mediorufa* Cockayne, suspected but not yet proved, and *Oporinia autumnata* ab. *latifasciata* Harrison, which is sex-linked and partially dominant.—E. A. COCKAYNE, 8 High Street, Tring.

A NOTE ON "BUTTERFLIES IN THE COASTAL REGION OF NORTH WALES".—With regard to Mr. Thompson's article in the June issue of the *Record* (64: 161), he makes a few observations on the volume which I compiled at the request of the Chester Society of Natural Science, Literature and Art, namely "the Butterflies and Moths found in the Counties of Cheshire, Flintshire, Denbighshire, Caernarvonshire, Angle-

sea and Merionethshire''. Records from over 130 entomologists were included in that volume and many contributors went to considerable trouble to give information.

Mr. Thompson was requested to give his records, but apart from writing that *Eumenis semele* Hübn. subspecies *thyone* and *Plebejus argus* L. subspecies *caernensis* occur above the Old Abbey Hotel facing Penmaenbach Point and that I was to be sure to give his name as the authority for these names, I received no assistance from him. If he had given the information, the lack of which he now criticizes, his few observations would have been considered and some included.

Vol. 3, 1949, and Vol. 4, 1950, of the *Proceedings* published by the above Society include supplements with additional records.

The list of Recorders has now grown to over 200, but it is not intended to do more than touch on the ecological aspect, neither are zoogeographical zones to be considered. The ordinary ordnance maps are satisfactory to the bulk of entomologists.—S. GORDON SMITH, Estyn, Boughton, Chester. 18.vi.52.

KILLING SPECIMENS FOR THE CABINET.—A little while ago the Editor, very properly, stated his objections to a mass murder of captured insects, and thence deduced an objection to my favourite killing agent, ammonia.

This corollary need not necessarily be drawn. I kill practically everything with ammonia and also kill nothing I do not want. I use ordinary glass-bottomed boxes, which have been varnished with shellac and have each had a hole bored through the lid. On returning home I put a drop of chloroform through each hole with a camel-hair brush and can then examine the bag; those that are not wanted revive in a short time and are released; the remainder are stacked in the boxes in a biscuit tin, a few drops of ammonia are poured on a piece of blotting-paper on the bottom, and the lid put on, and all are dead and ready to set in the morning. As it is my general rule to set everything I kill and not to go out again until the previous day's bag is set ammonia suits me perfectly.

The shellac on the boxes requires renewing every two or three years; if this precaution is observed they will last practically for ever and I am still using boxes given me when I was a schoolboy fifty years ago. I do not know who invented the shellacing dodge, so necessary to preserve the boxes from the ammonia fumes, but it was told me by my entomological mentor, the late Rev. C. R. N. Burrows of Mucking, in 1900.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea.

THE USE OF THE TERMINAL 'I'.—I have no wish to promote any acrimonious discussion since I have insufficiently strong views on the matter but I feel that the Editor's choice of a hypothetical case to support his argument (*Ent. Rec.*, 64: 150) is a poor one. The name *aureli* could never be derived from Aurelius since the latter would give rise either to *aurelii* (if a figure of antiquity were concerned) or *aureliusi* (if a modern person were intended) and in no way could produce *aureli* which can only be formed from Aurel. No reviser could legitimately alter *aureli* to *aurelii* unless there were some undoubted typographical or similar error or the reviser had a really sound reason to believe that a third person by the name of Aureli were concerned. Had the case been put the other way round, however, the name in the original descrip-

tion being *aurelii*, it would have been more convincing since there would then have been the possible ambiguity suggested. The name Aureli is, however, doubtless not altogether unlikely so that I should agree with the Editor that a reviser would have insufficient grounds for making the change. I must give the Editor best, however, since right at the very end of Borelli's paper referred to previously (*Ent. Rec.*, 64: 90) is a mention on one Pietro Gariazzo and my amendment should thus have been to *Forcipula gariazzoi* (and not to *F. gariazzii*) after all! This, however, does not affect the above hypothetical case.—D. K. McE. KEVAN, University of Nottingham. 2.vii.1952.

ALLAN'S 'LARVAL FOODPLANTS.'—A number of contributors write to say that they are using the generic and specific names given in my book *Larval Foodplants*. Unhappily there are certain mistakes and misspellings among these names, as follows. Of their charity, will those who use the book make the necessary corrections with pen or pencil?

Page 24. For *Chaonia ruficornis* read *Drymonia ruficornis*.

„ 39. For *Coenophila* read *Caenophila*.

„ 56. For *Brachyonycha* read *Brachionycha*.

„ 61. For *Anchocelis* (twice) read *Anchoscelis*.

„ 62. For ACRONYCTINAE read ACRONICTINAE.

„ 65. For *tragopogonis* read *tragopoginis*.

„ 66. For *lithoxylaea* read *lithoxylea*.

„ 68. For *ypsillon* read *ypsilon*.

„ 84. For *Iodis lactearia* read *Jodis lactearia*.

„ 86. For *holosericeata* read *holosericata*.

„ 90. For *quadrifasiata* read *quadrifasciata*.

„ 92. For *Colostygia* (four times) read *Calostigia*.

„ 93. For *Colostygia* read *Calostigia*.

„ 117. For *Chiasma* read *Chiasmia*.

P. B. M. ALLAN. 1.vi.52.

Collecting Notes

A NOTE FROM THE NEW FOREST.—On Friday, 30th May, a visit was paid to the New Forest. On most days until the 3rd June there were two or three hours of sunshine in the morning or afternoon alternated with rain. The evenings were dry. The usual butterflies were in evidence but no great number of any species. *Argynnis euphrosyne* was going over but *A. selene* was very fresh. *Hemaris fuciformis* and *H. tityus* were flying at the ragged robin and meadow plume thistle (*Cnicus pratensis*). Some *Melitaea cinxia* were seen along the railway bank. This species has spread northwards from Sway where Mr. Antram introduced it a few years ago. A few *Vanessa cardui* were sunning themselves on the meadow plume thistles and one *Hamearis lucina* was noticed. The other butterflies and moths were those usually seen at the beginning of June but the numbers were not much in advance of those seen in 1951.

At sugar, which was tried, though rather early in the year, *Dypterygia scabriuscula* was taken on Friday and again on Saturday (31st May); it was the only insect to arrive. On Sunday night, however, 2 *Thyatira batis* in fresh condition were taken with 1 *Meristis trigrammica* and 1

Ectropis consonaria. On Monday night (2nd June) twelve insects came to the sugar: 4 *T. batis*, 1 *M. trigrammica*, 1 *E. consonaria*, 1 *D. scabriuscula*, 2 *Phlogophora meticulosa*, 1 *Agrotis ipsilon*, 1 *Apatele rumicis* and 1 *Hypena proboscidalis*.

I beat the oaks for larvae of *Catocala sponsa* and *C. promissa* but was apparently rather late as I obtained only a full-grown *sponsa*. This has since produced a number of ichneumon cocoons.

Those who are interested in nature generally will like to know that the common buzzard was seen and that it is increasing its numbers in the New Forest, also that the bastard balm (*Melittis melissophyllum* L.) is still there but is now growing two miles away from its former haunt. Only about a dozen of its handsome spikes were seen.—C. CRAUFURD, Denny, Galloway Road, Bishop's Stortford, Herts. 10.vi.52.

[*Melittis* was not uncommon in a remote part of Ocknell Plain in the 'nineties. J. R. Wise (*The New Forest*, 1863) recorded it as "Very plentiful on the outer bank of Wootton Enclosure, looking westward".—P.B.M.A.]

COLLECTING IN WEST SUSSEX.—On 27th May I went with a young friend down to West Sussex for the day. He has been collecting locally for two or three years and he had a very good day, as he obtained five butterflies and six moths which were new to him. *Leptidia sinapis* was going over and *Euphydryas aurinia* though plentiful was past its first freshness as was *Argynnis euphrosyne*, but *A. selene* was in good condition. The following were also seen but none of them was common:—*P. aegeria*, *V. atalanta*, *O. venata*, *L. phlaeas*, *P. icarus*, *P. brassicae*, *P. napi*, *G. rhamni*, *C. rubi* and *H. lucina*. Good numbers of *P. megaera* and *C. pamphilus* were flying.

At the flowers of ragged robin *Hemaris fuciformis* and *H. tityus* were seen and several *Arctia villica* were disturbed. *E. hastata*, *P. strigillaria*, *P. macularia*, *A. plagiata*, *C. viridata*, *E. mi*, *E. glyphica*, *X. montanata*, *X. fluctuata* and *L. chlorosata* were seen or captured. The beginner has all the fun!—C. CRAUFURD, Denny, Galloway Road, Bishop's Stortford, Herts. 10.vi.52.

CAPTURES IN NORTH WALES.—During a visit to North Wales from the 23rd to the 27th of May last the following species and many others were attracted to light. Caernarvonshire: 8 *Tethea fluctuosa* Hüb.—this appears to be a new record for the county; *Notodonta anceps* Göze and *Drymonia dodonaea* Schiff. were very common. A few *Stauropus fagi* L. and two *Apatele alni* L. were also attracted. In Merionethshire, with the exception of *T. fluctuosa*, all the above appeared.—S. GORDON SMITH, Estyn, Boughton, Chester. 2.vi.52.

COLEOPTERA

Coleoptera at Knole Park, Sevenoaks, Kent

By A. A. ALLEN, B.Sc., A.R.C.S.

The following short list comprises the more noteworthy species so far encountered in a few exploratory visits, during the last two years, to this attractive locality—together with a few taken there by other collectors but not yet by the writer. Knole Park (in which stands the

historic house of that name) is a large area on the greensand, hilly and varied in aspect, having a wealth of fine and ancient timber amongst which oak, beech, ash and hawthorn predominate. Dead and dying trees, stumps, and fallen trunks and branches—in every stage of decay—abound. Considering its promising appearance, one's first impression of the Coleoptera is perhaps a little disappointing, but continued efforts bring to light a number of notable and interesting species and there is no doubt that thorough and systematic work over a long period would reveal a rich fauna with many rarities and additions to the recorded beetles of Kent. As yet only small portions of the area have been investigated at all, and that more or less superficially; so the present list (which omits species that are quite generally distributed and everywhere common in the south-eastern districts) is purely preliminary and capable of great extension. Of the localities in Kent which have been worked for Coleoptera, Knole Park is faunistically nearest to Cobham Park in the Rochester area, though that is partly on the chalk.

I have seen no published records of beetles from Knole Park, but the late W. G. Blatch did some collecting there as shown by the data on certain specimens in his collection. Moreover, several of the species recorded from Sevenoaks by Fowler were most probably taken in the Park—some of which, marked (S) in the list, have been found there recently.

Species not included in the *Victoria County History of Kent* (Fowler, 1908) are marked (NK). It must not, of course, be assumed that all such species are necessarily new for the county; some of them may have been already recorded since the above date. Species which are either scarce or highly localized in Britain as a whole are asterisked. The remainder are more or less local but widespread at least in southern England. Where there is no reference to frequency, a single specimen is to be understood. Roman figures relate as usual to months of capture.

CARABIDAE. *Amara apricaria* Payk.: under stone on hillside, viii. **A. equestris* Duft. (= *patricia* Duft.): ditto. *Calathus piceus* Marsh.: sparingly under stones and other cover.

SILPHIDAE. *Necrophorus investigator* Zett. (= *ruspator* Er.): in long-dead rabbit with *N. humator* Gled. and *Thanatophilus sinuatus* F., viii.

CHOLEVIDAE. *Uatops grandicollis* Er.: with the last. *Colan brunneum* Latr.: swept off grass under beeches towards evening, vii. (S).

LEIODIDAE. *Leiodes calcarata* Er.: in one restricted area by evening sweeping under beeches, not common; vi, vii. *L. litura* Steph.: male swept under lime trees in afternoon, x. *Agathidium seminulum* L.: two in old rotten beech log, x. (S).

SCYDMAENIDAE. *Neuraphes angulatus* Müll.: evening sweeping under mixed trees, x. *N. elongatulus* Müll.: ditto, vi.

ORTHOPERIDAE. *Orthoperus mundus* Matth.: several under bark of recently fallen oak bough, x. (NK).

PTILIIDAE. **Ptenidium brisouti* Matth.: one, situation uncertain, viii. (*Ent. mon. Mag.*, 1952, 88: 95). (NK).

STAPHYLINIDAE. *Phyllodrepa ioptera* Steph.: in wood-mould of old beech trunk, x. *Omalium italicum* Bernh.: evening sweeping in spinney, x. *Staphylinus globulifer* Fourc.: under loose bark, ix. **Quedius*

scitus Grav.: ditto. *Conosomus immaculatus* Steph.: sweeping, vi. *Bolitochara lucida* Grav.: in fungoid wood of beech, x. *Aleochara lata* Grav.: with *A. curtula* Goeze in carrion, a few, viii.

PSELAPHIDAE. **Trichonyx sulcicollis* Rehb.: one in Blatch coll. labelled as from this locality. **Euplectus duponti* Aubé (= *kunzei* Fowl.): swept from grass under oak, vi. (S). **E. afer* Reit. v. *infirmus* Raf.: apparently this species, ditto. (NK). *E. piceus* Mots.: a number in rotten beech stump, viii. *E. nanus* Rehb.: with the last; and under decayed beech bark, x.

HISTERIDAE. **Plegaderus dissectus* Er.: in wood-mould of old beech log, x. (NK). *Abraeus globosus* Hoffm.: not rare in similar habitats. *Micromalus flavicornis* Hbst.: ditto. and rather frequent under bark.

PHLOEOPHILIDAE. **Phloeophilus edwardsi* Steph.: twice singly by evening sweeping in spinney, ix, x. (My first capture of this interesting insect.)

ELATERIDAE. Only a few common species hitherto met with, but larvae of **Athous villosus* Fourc. (rare in Kent) have occurred under beech bark.

TRIXAGIDAE. *Trixagus carinifrons* Bonv.: not rare by evening sweeping, v-ix.

EUCNEMIDAE. *Melasis buprestoides* L.: a dead male in spider's web on beech trunk and remains of others in their burrows, vi. (S).

NITIDULIDAE. **Carpophilus sexpustulatus* F.: under sappy bark of freshly fallen oak branch, x. (New to West Kent; see *Ent. mon. Mag.*, 1951, **87**: 7.) **Epuraea guttata* Ol. (= *10-guttata* F.): male at *Cossus*-infested poplar, v. *E. pusilla* Ill.: with the last. (Often considered generally distributed, but in reality quite local.) *Soronia punctatissima* Ill.: with the last. *S. grisea* L.: several from sap of oak and poplar infested with *Cossus*, v, vii. *Cryptarcha strigata* F.: ditto. *Librodor* (= *Ips* auct.) *4-guttatus* F.: at *Cossus* poplar, and in plenty under sappy beech bark, vi-viii. (NK). *L. hortensis* Fourc. (= *4-punctatus* Ol. nec L.): not uncommon at *Cossus* sap, v-vii; one under thick elm bark, x. (NK). The absence of previous Kent records for these two widespread species, as Fowler remarks, is curious. *Rhizophagus perforatus* Er.: three by evening sweeping under elm and oak, vi. *Pocadius ferrugineus* F.: swept up under lime trees, x.

CUCUJIDAE. *Laemophloeus ferrugineus* Steph.: under bark of large limb of oak, ix. *Silvanus unidentatus* Ol.: sometimes in numbers under bark.

CRYPTOPHAGIDAE. *Cryptophagus pubescens* Stm.: evening sweeping, viii, x. *C. dentatus* Hbst.: two or three times under bark (the usual habitat of this species). *C. lycoperdi* Scop.: in profusion in puffballs (*Lycoperdon* sp.), viii. *C. setulosus* Stm.: swept at dusk under oaks, vii. **Caenoscelis pallida* Woll.: an example of this rarity by sweeping under trees after sunset when the grass was very wet, 22.viii.51.

LATHRIDIIDAE. **Lathridius bifasciatus* Reit.: two beaten off mixed hedge in evening, same date; twice singly by sweeping grass under trees at twilight, ix and x. (NK). (An Australian species naturalized here in the open; see *Ent. mon. Mag.*, 1951, **87**: 216, 287.) *Enicmus histrio* Joy: one with the last, x. **E. testaceus* Steph.: about a dozen in and

especially under a powdery fungus (*Reticularia* sp.) on trunk of dead standing ash, v. *Corticaria elongata* Gyll.: evening sweeping, ix. (Much less generally common than usually represented.)

MYCETOPHAGIDAE. *Litarigus connexus* Fourc.: not rare under beech bark. *Mycetophagus atomarius* F.: on several occasions under rather dry fungoid beech bark. (S). *Pseudotriphyllus suturalis* F.: in *Polyporus* on beech, x.

COLYDIIDAE. **Synchita angularis* Abeille: one standing over the name *juglandis* F. in coll. W. G. Blatch, labelled 'In beech stump, Knole Park, Sevenoaks, 27.7.82'. I took a specimen on my first visit to the locality, 25.vi.50, under a piece of loose bark on a sound prostrate beech trunk. (NK). (The species is not yet recognized as British, but I have it also from Windsor Forest and Park. A full account will appear shortly in the *Ent. mon. Mag.*) **Cicones variegatus* Hellw.: under dry beech bark, vii. *Bitoma crenata* F.: fairly common under bark. **Cerylon fagi* Bris.: in wood of old *Cossus*-infested poplar, viii.

CIIDAE. *Cis setiger* Mell.: in bracket fungi on old log, with *C. boleti* Scop., rare, x. *C. hispidus* Payk.: scarce, ditto. *C. bilamellatus* Fowl., a few with the last. *C. nitidus* F.: plentiful in hard tinder-bracket (*Fomes*) on dead beech. *Ennearthron affine* Gyll.: in numbers with *Cis* spp. and *Octotemnus*, as above.

CANTHARIDAE. *Malthodes pumilus* Bréb.: by sweeping at nightfall, vi.

PTINIDAE. **Ptinus subpilosus* Stm.: male swept off grass under old trees, v.

PYTHIDAE. *Lissodema 4-pustulatum* Marsh.: by sweeping under old ash trees, viii.

PYROCHROIDAE. *Pyrochroa coccinea* L.: only larvae of this splendid species have been found, under bark of beech and oak.

XYLOPHILIDAE. *Xylophila pygmaea* Deg.: beaten from foliage of partly decayed oak, vi.

SERROPALPIDAE (=MELANDRYIDAE). **Phloeotrya rufipes* Gyll.: on or under bark of beech log, viii. (A. M. Masee).

ALLECULIDAE (=CISTELIDAE). *Prionychus ater* F.: under loose bark on old oak, vi; larvae on several occasions in mould of hollow or dead trees.

SCARABAEIDAE. *Geotrupes vernalis* L.: Dr. Masee used to take it some years ago on and under deer dung in a particular area, in late August, but though the conditions seem unchanged we have failed to find it recently. (*Typhaeus typhoeus* L. is common; I have seen no *Geotrupes*.) **Aphodius zenkeri* Germ.: common in deer dung, also taken by evening sweeping; vi-viii, especially vii. (S). *A. equestris* Panz. (=sticticus Panz. nec L.): occasional, but in numbers when found, in horse dung, viii. **A. tenellus* Say (=putridus auct. Brit.): in deer dung, especially with *A. ater* Deg., not very scarce; v-ix. *A. obliteratus* Panz.: in cow and other dung, rather common in autumn with *A. contaminatus* Hbst. which it much resembles; ix, x.

LUCANIDAE. *Sinodendron cylindricum* L.: in rotten trunks, chiefly ash, local, v. (I believe it can be found, like *Dorcus* throughout the year.)

CERAMBYCIDAE. *Prionus coriarius* L. Knole Park appears to be best known to Kent collectors as a locality for this imposing species, and I

am told that during its late evening flights it has sometimes been caught in numbers. Dr. Massee and I find odd specimens on the trunks or roots of trees (oak, beech, ash) on sultry evenings, but have not yet seen it in flight; end of vii to ix. (S). **Leptura scutellata* F.: on or in beech, vii. (A. M. Massee).

CHRYSOMELIDAE. *Longitarsus rubiginosus* Foud. (= *flavicornis* All.): rather freely on *Convolvulus sepium* in hedge, viii and ix. (NK). *L. parvulus* Payk. (= *ater* auct. Brit.): abundant by beating and sweeping in autumn, and probably also throughout the summer.

BRUCHIDAE. *Bruchus rufipes* Hbst.: by general sweeping, ix.

CURCULIONIDAE. *Apion haematodes* Kby., *cruentatum* Wltn., and *marchicum* Hbst.: not uncommon on *Rumex acetosella*, v-x. *Strophosomus faber* Hbst.: three in and about rabbit burrows in very sandy ground, x. *Barypithes pellucidus* Boh.: scarce by sweeping, vi. (Common in many places near London.)

SCOLYTIDAE. **Taphrorychus bicolor* Hbst.: common in the bark of fallen beech, v-x; see *Ent. mon. Mag.*, 1951, **87**: 31. This rarely recorded species is probably much overlooked. *Pityophthorus pubescens* Marsh.: by beating dead twigs of Scots pine, x. *Platypus cylindrus* F.: plentiful on and boring into beech logs, viii. (NK). Not rare in Kent, despite the seeming lack of records.

HYDROPHILUS PICEUS L. AT LIGHT.—In the *Record*, vol. 64, page 64, is reprinted a Note by the late J. W. Tutt on the numbers of *H. piceus* found dead under the electric lights at Turin in August, and on page 84 of the same volume readers are asked if any specimens of this beetle have been captured at the mercury vapour lamp.

Mr. D. More has recently been using an ordinary circular m.v. moth-trap in his garden at Hockley near Southend (Essex) and in the first week of May he asked me what a very large oval black beetle was that had come to the trap on the previous night. From his description it appeared to be *H. piceus* but I asked him to save me the next that came and on 17th May he caught another which was sent to me alive and proved to be a fine *piceus*. The following night he took four more, which were released in the garden.

The most interesting fact about these captures is that so far he has taken no specimen of any species of *Dytiscus*, although these are much commoner locally than *H. piceus*. There is little water near Mr. More's house and it seems probable that these examples of *H. piceus* have come some distance. *Piceus* was to be found, but rather uncommonly, on the Leigh marshes when I first came to the district some twenty years ago; since then, however, it has been extensively sought after by professionals to supply aquarists and now appears to be very scarce indeed. My friend Mr. Lionel Day wanted a specimen or two to photograph two or three years ago and he informs me that of the larger water beetles he obtained with a dredge only about two in a hundred were *piceus*, the remainder being all *Dytiscus*, mostly *marginalis* with a very few *punctulatus*.

It would therefore appear that *H. piceus* is much more strongly attracted by light and probably a greater wanderer than members of the genus *Dytiscus*.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea.

DIPTERA

Notes on the Asilidae (Robber Flies)

By L. PARMENTER.

Visiting sandy heathland such as Oxshott, on a sunny day in mid-April, one may find the first Asilid of the year. Mid-May will see the appearance of other species inland, in varied habitats, and though these will have disappeared during the summer, others take their place. By the end of September, however, only two species will remain.

This family of Diptera, of which some 27 species are known from Britain, can therefore be studied for 5 months of the year. It is necessary to travel from North to South, and from West to East, to meet all the species; for several are very local. A few are confined to Scotland, a few to Wales, others to southern England and one to East Anglia.

They live as hunters, the only family of flies in this country restricted to this habit. Other families possess species that hunt insects but they also suck plant juices.

They are to be recognised by their wing venation, coupled with the pointed proboscis with its long hairs overhanging the mouth edge—the so-called face beard. The legs and body are very bristly. The bristles of the legs are especially to be noted, for their use in holding and capturing their prey is of great importance. The head is very mobile—a useful attribute in a hunter. The wings are narrow for speedy flight. Their strength must be considerable for they can fly with heavy booty. Their size, as flies go, is medium to large—elsewhere in the world they include the largest flies known. Their long bodies help them to balance themselves in flight when carrying prey. The legs are long, strong, and well armed.

They appear studious, mostly sitting watching for likely victims. They are brave in their attacks on strong predatory and armoured beetles, well-armed wasps, and even dragonflies.

Males and females are alike in colour but the females are often larger than the males and can be recognised by their ovipositors whilst the males have claspers that are always visible.

DISTRIBUTION.

First to find them. Verrall had at least one species in his garden at Denmark Hill. A few species occur in our inner area* at Hampstead, Bowes Park, Richmond and Mitcham and may well occur closer to the centre of the metropolis. They are not town lovers, however, but it would be interesting to know how near they approach to the City; and especially whether they colonise new ground in London or are relicts of the old days of spacious meadows, marshes and woods.

As with all insects, the greater part of their life is spent in the immature stage. The light soils which are also the dry and warmer soils such as the sands, chalk and valley alluvial, are apparently preferred.

*This refers to the central portion of the London Area as studied by the London Natural History Society, to whom this paper was read.

The numbers of individuals and species to be found on clay might well be studied and compared with the distribution on the light soils. It must be remembered that clay need not be a deterrent if covered by a lighter soil in the form of a loam with a reasonable depth, *i.e.* sufficient for the immature stages—a few inches in most cases.

Their habitat preferences are still comparatively little studied but already certain species are known to be very restricted in distribution. On the coastal dunes, *Philonicus albiceps* is to be found in the sunny places to the leeward, almost invariably on the blown sand, particularly of tracks and small areas of open sand with marram grass tufts within 2-3 feet. As the dune becomes fixed and the moss and flower carpet begins to cover the sand, *Dysmachus trigonus* appears. At times I have found it overflowing on to the blown sand areas. *Dysmachus* is also widely distributed inland, showing a preference for scrub country, with its varied bushes and high grass—open to the sun and not shaded by large trees.

The dune carpet, of rabbit-nibbled moss and grass turf with its thyme-covered hillocks, is a haunt of *Epitriptus cingulatus*, a species also to be found in hedgerows. Further inland, where meadows and long grass appear, species of *Dioctria* such as *rufipes* and *atricapilla* and *Leptogaster cylindrica* are to be seen hunting. *Machimus atricapillus* occurs on the hedge banks, fences and posts of the fields.

In the open deciduous wood *Dioctria oelandica* will seek its prey in the low, partially shaded vegetation, whilst *Neoitamus cyanurus* prefers the higher layer of vegetation—the tops of the bracken and the canopy of the trees where, at the wood edge, it hunts with *Machimus atricapillus*. *Laphria marginata* is a species of the deciduous woodland in this country and is tolerant of areas with less ground vegetation; hunting from tree trunk, stump, felled log, as well as ground vegetation, stones and lower branches of trees.

The pines of the north give cover to *Laphria flava*, our most robust Asilid, and those of the south may prove to be the home of *Laphria gilva*, a species first taken in this country in Windsor Forest and which I was lucky enough to find at Oxshott. Larvae of this species have also been reported in Surrey at Ash Vale and it may prove to be spreading.

Near the pines, in the sparsely heather-covered sandy heaths in the south, *Lasiopogon cinctus* occurs, with *Rhadiurgus variabilis* taking its place in Scotland. *Epitriptus arthriticus* seems restricted to the steppe-like brecklands. The rising downlands are haunted by *Isopogon brevirostris* and here, on the turf paths and sheep tracks, *Asilus crabroniformis*, in gold and black velvet, our most beautiful Asilid, hunts grasshoppers and other large prey.

From the evolution and natural selection points of view, the family's use of habitats is most interesting, for here we are dealing with creatures which where they overlap are deadly competitors. Not only will species attack and kill other species of Asilidae but I have found individuals of the same species killed by their own kind. Only jungle fighters of the toughest calibre survive. Though food is generally in abundance, an increase over a certain density by any Asilid species would therefore result in an automatic check by this cannibalistic habit.

Like dragonflies they are very susceptible to sunshine and abhor the dark forest and, I should imagine, those readers who have been

in the tropics will not have found them in the rain forests. As I shall later show they cannot emulate species like the Hover-flies who can exist at tree-top level at all stages of their existence. All Asilidae (here as throughout this paper I am concerned with those found in Britain) are earth-bound in their early stages with the exception of the Laphrinae.

Eggs.

The diptera form a highly developed order of insects and the Asilidae—as hunters—one would expect to be of the highest development within the order. This is evident even from the eggs. These vary in shape, size, and hardness in the family but seem adapted to their needs. The soft, more or less lengthened eggs of *Dysmachus*, *Eutolmus*, and *Neoitamus* are laid on plants whilst those laid on or in the ground by *Leptogaster*, *Dioctria*, and *Laphria* are round or broadly oval generally with hard shells. Again, the hidden eggs of *Machimus*, *Neoitamus*, *Asilus*, *Dysmachus* are white and those laid in the open such as *Leptogaster*, *Dioctria*, *Laphria* and *Rhadiurgus* are yellow to brown in colour.

The numbers laid vary from at least 60 to over 400 per individual. No definite figures can be laid down since it is difficult to follow one individual right through its egg deposition period except in captivity, where conditions are so abnormal that results may deviate widely from a natural performance.

Their size varies from 0.43×0.36 mm. in *Leptogaster cylindrica* to 1.3×0.55 mm. of *Asilus crabroniformis*. Bumps and ridges are present on some eggs but they lack the fine sculptures found on ova of Lepidoptera.

OVIPOSITION.

Before considering egg deposition habits, the ovipositors of the imagines should be reviewed. They vary in shape from the abrupt blunt end, almost lack of ovipositor, of *Leptogaster* and *Dioctria* to the longer, narrow ovipositors of the Asilinae, with the longest being found in *Neoitamus cyanurus*. *Philonicus albiceps* has a noticeable difference, namely, a row of long up-turned spines at the apex.

The female *Leptogaster cylindrica* lays her eggs by jerking them from her as she rests on a grass stem, dropping an egg at a time on to the ground amongst the herbage. Hard, dark, round balls that are left uncovered—open to the world. *Dioctria rufipes* and *atricapilla* drop their eggs similarly, one at a time from their perch on a grass stem or leaf of some herb, moving away after laying each egg. Thus the blunt ends to the ovipositors are sufficient for the purpose. *Lasiopogon cinctus* lays her eggs in sand. Her ovipositor has a group of spines that are shaped like a shovel at the apex well suited to the task.

Laphria females have short conical ovipositors and lay their eggs in cracks on tree stumps, and amongst pine needles and tree débris on the ground. *Laphria gilva* was seen by Melin to lay 3 eggs at a time, placing them between bark and soil at the base of a pine stump, and also in the ground near to the stump. *Laphria marginata* is recorded to lay eggs not only on and around tree stumps, but also on pieces of wood lying on the ground. The female *Laphria flava* confines herself to tree stumps—pines, and probably birches and other trees that may be in the neighbourhood. In the *Laphrinae* the ninth segmental plate covers the ovipositor and thereby strengthens it for insertion into hard places.

Philonicus albiceps haunts the coastal dunes. Here, the prevailing wind is generally from the sea, and is very strong at times. This species prefers the leeward side of the dunes thus securing its comfort and protecting the egg from being desiccated by exposure to sun and wind owing to the covering of sand being blown off. The fly alights on the sand, feels with her ovipositor and lays her egg, by thrusting as much as half her abdomen into the sand. Afterwards she sweeps sand over the hole, raking it with the long upturned spines that are at the apex of her body. This habit has also been noted in America in connection with other species. That it is instinctive is proved by the fact that it has been observed where the eggs have been laid in loose running sand which had already covered the hole as the ovipositor was withdrawn.

Several female *Pamponerus germanicus*, lovers of sandy areas, were observed on several occasions by Melin to release 3 eggs at a time to fall to the ground whilst they were seated on a stem in a grass tuft.

Both Melin and Xambeau record oviposition by *Asilus crabroniformis* in cow-dung.

Rhadiurgus variabilis has a broad truncate ovipositor which is suitable for its purpose, for the eggs are laid singly at the side of the tips of moss stems and pine needles that have fallen on to the ground.

Dysmachus has a more pointed ovipositor and the eggs are laid by the insertion of the apex of the abdomen into the flowers of various grasses. The female invariably sits with her head down and curves her abdomen over. On one occasion, Melin, who spent eight whole summers studying the daily habits of Asilidae, saw what he considered to be an intelligent action. A female alighted on a grass head which was weaker than usual and bent under her weight. She as usual was also head down, and curving her abdomen tried to lay her egg without success. After several attempts she turned round and curved her abdomen again, and, being now suitably placed, was able to thrust the tip of her abdomen into the interior of the spikelet.

Eutolmus rufibarbis has a broad-ended ovipositor with a very sharp tip. This is used to slit the skin of a blade of grass into which the eggs are laid. As many as 11 at a time were found by Melin.

Machimus atricapillus is recorded as laying eggs in flower-heads, whilst *Epitriptus cingulatus* lays her eggs in the recesses of leaves.

The female *Neoitamus cyanurus*, when gravid, haunts the tips of the lower branches of trees where, with her long narrow abdomen, she lays her eggs amongst the bunched buds and small leaves at the tips of the twigs. The eggs are therefore left several feet above ground.

LARVAE.

On hatching, the *Neoitamus* larvae drop to the ground and burrow into the soil. They would quickly die if they remained on the tree for long, for their skin is not tough and is susceptible to lack of moisture. Their descent to the ground, although abrupt, is probably hardly felt, for they are tiny, light, and at their initial stage provided with very long bristles which must serve partly as a parachute and partly as a cushion on alighting.

The larvae of *Laphria* species quickly make their way to trees and live in the stumps or rotting branches lying on the ground, etc. They have strong neck muscles, apparently adapted to a tough existence

which, according to Melin, is often evident from the worn appearance of the larval mandible on examination. Duffy, when searching for beetle larvae, found four larvae of *Laphria gilva* in the bark of pine stumps.

The ground dwelling Asilid larvae have been reared almost without exception from sandy soils. Whether this is because these soils are easier for observation or whether the species prefer the light soils remains to be proved. Personally I believe that heavy clay soils are unlikely to be attractive to these larvae. Observations on this point are needed. Even records of the presence of adults in clay areas would be useful, particularly if a comparison of density on clay and sandy areas were made.

Leptogaster larvae have often been found by observers to be bent in V-shape. It has been suggested that this is because they proceed through the ground in jerks. Most ground dwellers, of other families of Diptera as well as Asilidae, wriggle along despite lack of legs, often using their mouth-hooks as grappling irons.

The larvae are whitish in colour with dark brown head capsules. Those of *Laphria* have bumps like warts on their backs and other Asilidae have lateral ridges. They possess no legs but have swellings which can be contracted at will. Each species can be differentiated, according to Melin, who also states that they change very little during growth. The old skins are sloughed off in pieces rather than the clean total change made by the larvae of other orders.

There has been much discussion of the food of Asilid larvae. The adults suck animal juices and the larvae were expected to be carnivorous. Although there are several records of the larvae of *Laphria* attacking and sucking beetle larvae, the bulk of the evidence suggests that the Asilid larvae are plant feeders but able to deal with any animals found in their passage through wood or soil. The worn mandibles of *Laphria* already mentioned suggest hard work chewing wood rather than sucking insect juices.

Melin tells an amusing story of an experiment in which he placed a beetle larva known to be a wood-eater in a tube with a *Laphria* larva to see the latter's attack. On the contrary, the attacker was the beetle grub and it quickly killed the immature Asilid!

Laphria and *Dioctria* larvae hatch through circular holes they make in their eggs. The Asilinae larvae make irregular holes to venture into the world. They are very tiny, 1-2 mm. long, and make for the earth to escape drying. *Laphria* larvae often have to travel quite a distance to the stumps in which they will develop. Their sensitiveness to moisture and to dryness will cause the ground dwellers to migrate to depths of a foot and a half, but normally they are found at a short distance below the surface. Towards the time for pupation, they move nearer the surface ready for the final emergence as adults. The larva has a dormant period in which the pupa gradually forms—this is visible through the almost transparent skin. The pupal period lasts from two to six weeks. Larvae may take as long as three years before pupating. The number of times they slough their skins is difficult to observe and is not really known.

PUPAE.

The pupae of all Asilidae show wing-cases and budding legs. They carry hooks on most segments with bristles varying in length and

strength. Those of *Leptogaster* have long feathery bristles. Both ends of the pupa have strong horns, the shape of which vary according to the species. The pupa moves to the surface, ready for the imago to emerge, by a rotary motion in which the spiny hooks must play a useful part. The emergence of the adult takes place through a T-shape slit.

The newly hatched fly is light in colour, and the wings develop in about ten minutes, but the leg colours may take several hours. When the fly has recovered from its exertions of emergence, it deposits a whitish excretion. As soon as the wings are dry, and the fly is strong enough for prolonged flight, it is ready for mating, which takes place within a short time.

The adult probably lives 2-6 weeks in nature. Certainly one finds specimens very worn and torn. Often in dune areas, the same patch of blown sand will be frequented for several days on end by a *Philonicus albiceps* which appears to be the same individual.

COURTSHIP.

There appears to be little epigamic display in the Asilidae—at least of those found in Britain. It is recorded only for the genus of *Dioctria*. Courtship display of the males of this genus is confined to the hovering close to resting females. The male swings from side to side, moving in an arc. When the female moves off he follows and commences his swinging flight as soon as she comes to rest once more. The shiny pleural stripes must flash in the sunlight and may attract the female, but it is to be noted that both female as well as male are decorated in this way. Sometimes the females have been found to be in positions which would have kept them hidden from the dancing males, so that it would appear that their location is ascertained by the males by scent. This is a particularly interesting point for it would account for the overlapping of the species in ecological and geographical distribution without any interbreeding.

(To be continued.)

VOLUCELLA ZONARIA PODA IN BOURNEMOUTH.—This species seems to be well established here. I took one in my garden in August 1950, and last summer two or three specimens appeared regularly for several days at the end of August. They visited the flowers of hemp agrimony, golden-rod and michaelmas daisies. One of them had a slight deformity and I had no difficulty in recognising it.—H. SYMES, 52 Lowther Road, Bournemouth. 15.v.52.

Fifty Years Ago

(From *The Entomologist's Record* of 1902)

LARVAE OF BRYOPHILA MURALIS (GLANDIFERA).—I have never seen the larvae of this reported as feeding on lichens on trees, but always on walls, and have often wondered why it should not do so. I have often searched but without result, until last week, at Folkestone, I found on a tree-trunk, a cocoon containing a full-fed larva, ready for pupation, and on two other trees I found two more larvae feeding on the lichens; near their cocoons, to which they retire when not feeding. These trees

were a long way from any walls. Can you tell me why this insect is never found more than about ten miles inland, whereas *B. perla*, occurs in almost every town inland, even as near London as Dulwich, where I took them last year?—C. W. COLTHERUP.

DISCHARGE BY *ANCHOMENUS JUNCEUS*.—A few days ago I pillboxed five specimens of *Anchomenus junceus* when collecting in Whitley Wood in the New Forest. On returning home I noticed such a curious occurrence in respect to one of them, that it seems worth recording. On turning one of them out of the pillbox, and touching it with a piece of cardboard dipped in chloroform to quiet it, it immediately sent out, from both sides of its abdomen, jets of dense white vapour; on touching it a second time it repeated this. The vapour was very dense, and did not condense for some time. On returning it to the box and opening the box shortly after, I found the box full of white vapour, so it must have let off the steam a third time. I know that the bombardier beetle does something of this sort on a small scale, also I know a South American beetle that does this, and that the vapour leaves a mark like caustic on the fingers, but this is the first decided instance of the sort I have met with in England.—B. PIFFARD.

Current Literature

THE HASTINGS AND EAST SUSSEX NATURALIST, 8: 3—A survey of the Sphingidae and Notodontidae of the Hastings District, by M. J. Mowbray. Sixteen species of Sphingidae and seventeen Notodontidae are considered, with details of abundance and times of appearance in this locality. An interesting comparison is made with the old published records available for this area.

— 8: 24—Notes on Local Fauna and Flora for 1951: Lepidoptera. By N. F. Ticehurst. This consists of notes on the distribution of butterflies in 1951 with first and last dates for a number of moths in the area. Some numerical and directional details of migrating *Pieris brassicae* and *P. rapae* are given.

LUNDY FIELD SOCIETY: FIFTH ANNUAL REPORT, 1951. This contains brief notes on thirteen species of Lepidoptera observed on Lundy Island during 1951. A new Island record was that of the sawfly *Athalia scutellariae* Cameron.

A POSSIBLE GENETIC EXPLANATION AND UNDERSTANDING OF MIGRATION OF CONTINUOUS BROODED INSECTS. H. B. D. KETTLEWELL. *Nature*, 1952, Vol. 169, No. 4307, p. 832.

Dr. Kettlewell advances the hypothesis that "there is a gene, *M*, for increased metabolic rate giving an insect capacity for increased activity and migration. Insects constituted *MM* are essential migrants, those constituted *mm* are unable to migrate (possibly due to absence of fat body). The heterozygotes, *Mm*, when conditions are disadvantageous would all migrate, but when advantageous would all remain; decreased heat and drought would tend to keep back the heterozygotes from migrating". His suggestion that there is no fat body in insects constituted *mm* is unlikely, but could be proved or disproved without much difficulty. He says that at the end of summer

the offspring of migrators, *MM*, would return to the starting point and gives as his most important evidence observations by Lack, who observed a flight south over a high pass in the Pyrenees in two successive years. Several well known migratory species of butterfly, and dragonfly, and a Dipteron took part in the movement, and he gives a list including *Sympetrum striolatum* (misprinted *Sympetrium striolatum*) and *Epi-syrphus* (which is rendered *Episyrphus*). There is some further evidence of a southward flight, but there is no evidence available yet that they ever reach the place from which the migration started. Unless the ratio of those that get back to the non-migrators they find at their destination is about the same as the ratio of migrators to non-migrators at the time and place where the migration originated the hypothesis falls to the ground. A serious deficiency of migrators returning would lead in time to the formation of a non-migratory population. The fact that heterozygotes have an advantage over both the homozygotes, because they can migrate or remain according to circumstances does not affect the argument.

Kettlewell then goes on to say that other theories of migration, i.e. that it is due to environmental causes such as overcrowding or drought, cannot be true for the two following reasons, "(1) that there are always individuals left behind that do not migrate, (2) that subsequent generations from initial migrants, though bred in an entirely different environment continue to migrate". With regard to (1) most migrations take place from a large tract of country and there will not be sufficient overcrowding in every part of the area to cause migration assuming that overcrowding is the cause. If drought is the cause it will not be so uniform and severe throughout the area as to make every insect migrate. Locusts migrate because the migratory phase only develops where the concentration of hoppers reaches a certain level, and this does not occur all over the breeding area so that there is always a stock of locusts in the solitary phase left behind. As to (2) I think the statement is incorrect, and I do not believe that the homozygous offspring of migrators continue to migrate. The author makes the statement but gives no evidence to support it.

Even if all the assumptions made are in fact true it would not prove that there is genetic control of migration in insects. It seems more probable that the cause is environmental as in locusts. Kettlewell's hypothesis may be correct, but he has not proved it nor do I see how he can ever do so.

Towards the end of his letter he advances a supplementary hypothesis that it is possible that "the same gene which controls metabolism and migration might also control metabolism of pupal hatching and diapause".

He concludes by saying "Proof of this hypothesis, still unconfirmed, might lead to its application in the realm of pest-control in the following ways—(1) by attacking returning individuals outside their reservoir of breeding thereby eliminating those homozygote (*sic*) to migration (*MM*). (2) by encouraging those individuals with the formula *mm* (non-migratory); great damage might in fact be done by elimination or reduction of these". Well! Well!

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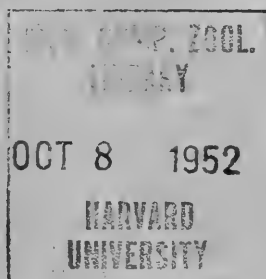
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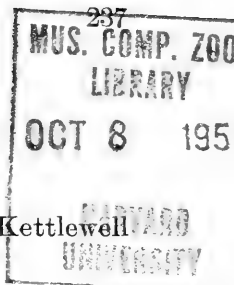
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Aberrations of British Geometridae

By E. A. COCKAYNE, D.M., F.R.C.P.

Plate X.

[The following aberrations are all in the Rothschild-Cockayne-Kettlewell collection in the British Museum.]



Mesotype virgata Hufnagel ab. **bicolorata** ab. nov. (Fig. 1).

The ground colour of the forewing is pure white; the basal and median areas are dark grey bounded by thick black antemedian and postmedian lines, a second black line running parallel to and just internal to the postmedian; the marginal area is white and without markings and the border is greyish. On the hindwing the basal half of the wing is dark grey bordered externally by a blackish line; there is another blackish line parallel and just internal to this; the marginal area is whitish becoming slightly darker at the margin itself.

Type ♀ : Chute, Wilts., 1.vi.1942, W. L. Freer. Cockayne coll.

Mesotype virgata Hufnagel ab. **infravirgata** ab. nov. (Fig. 2).

On the forewing the basal line and the bands bounding the median area are blackish; the median area is partly filled in with blackish; the marginal area is dark; there is a broad white band between the median and marginal areas. The hindwing is whitish with a broad blackish band across the middle and no other markings.

Type ♀ : Arundel, Sussex, 1911, Pennington. Cockayne coll.

Mesotype virgata Hufnagel ab. **albofasciata** ab. nov. (Fig. 3).

On the forewing the basal and median areas are dark grey; the basal and antemedian lines are broad and blackish; bounding the median area externally is a very broad blackish band; the marginal area is dark grey; on each side of the median area is a conspicuous broad white stripe. On the hindwing the basal area is greyish, the post median band is dark with a dark line just internal to it; the marginal area is dark and separated from the postmedian band by a broad white stripe.

Type ♀ : Dawlish, Devon, 27.viii.1897. Bankes coll.

Abrazas grossulariata Linnaeus ab. **striata** ab. nov. (Fig. 13).

This is a combination of ab. *dohrnii* Koenig (*lacticolor* Raynor) and ab. *aberdoniensis* Raynor, and since both these aberrations occur together in Aberdeen it may be taken wild.

On the forewing a heavy peppering of black scales along the median nervure from the base to the discoidal spot represents the strong black line found in ab. *nigrolineata* and in all *aberdoniensis*, and in some cases there is a similar peppering along other nervures and along the costa. From the black marginal spots on the termen black interneural streaks with ill-defined edges run to the black spots of the outer transverse fascia, and when the streaks are incomplete there are scattered black scales in the intervening spaces; these represent the solid black streaks seen in the radiated forms of *aberdoniensis* and are determined by one of the recessive genes of this multifactorial complex. On the hindwing none of the markings are sharply defined except the discoidal spot and the wedge shaped marginal spots are bordered by a powdering

of black scales. *Ab. striata* may be combined with *ab. supralutea* Raynor or *ab. lutea* Raynor, which was introduced into the stock from Lancashire. I believe that *ab. lactea-nigra* Raynor is a combination of *ab. dohrnii* and *ab. nigrosparsata* Porritt, but the best example I have seen, labelled by Raynor himself is *ab. striata* combined with *ab. nigrosparsata*.

Type ♂ : Sudbury, 1920, Harwood. (Baldock coll.) Cockayne coll.

Allotype ♀ : Lancs. ex. 23/26, bred 20.vi.1927. Raynor. Levick coll. B.M., 1941, 83.

Paratypes 6 ♂ : Lancs. ex. 16/26, bred 12.vi. 1927. Raynor. Levick coll.; Lancs. ex. 29/25, bred 7.vi.1926. Raynor. Levick coll.; Lancs. ex. 29/25, bred 5.vi.1926. Raynor. Levick coll.; Lancs. ex. 36/25, bred 7.vi.1926. Raynor. Rothschild coll.; Yorks. ex. 29/24, bred 7.vi.1925. Raynor. Cockayne coll.; 120/11, H. Onslow. B.M., 1948, 282.

The origin of the *dohrnii* was Lancs. or Yorks. and of the *aberdonensis* Aberdeen.

EXPLANATION OF PLATE X.

- Fig. 1. *Mesotype virgata* *ab. bicolorata*. ♀. Type.
 Fig. 2. *Mesotype virgata* *ab. infravirgata*. ♀. Type.
 Fig. 3. *Mesotype virgata* *ab. albofasciata*. ♀. Type.
 Fig. 4. *Ennomos quercinaria* *ab. approximata*. ♂. Type.
 Fig. 5. *Selenia lunaria* *ab. centripetala*. ♂. Type.
 Fig. 6. *Erannis marginaria* *ab. curvilineata*. ♂. Type.
 Fig. 7. *Cabera exanthemata* *ab. lativittata*. ♂. Type.
 Fig. 8. *Chiasmia clathrata* *ab. obsoletissima*. ♀. Type.
 Fig. 9. *Chiasmia clathrata* *ab. lativirgata*. ♂. Type.
 Fig. 10. *Abraxas sylvata* *ab. purissima*. ♀. Type.
 Fig. 11. *Abraxas sylvata* *ab. circumnotata*. ♂. Type.
 Fig. 12. *Selenia tetralunaria* *ab. postradiata*. ♀. Type.
 Fig. 13. *Abraxas grossulariata* *ab. striata*. ♂. Paratype.
 Fig. 14. *Abraxas grossulariata* *ab. unilineata*. ♀. Type.
 Fig. 15. *Selenia tetralunaria* *ab. lacticolor*. ♀. Type.

Abraxas grossulariata Linnaeus *ab. unilineata* *ab. nov.* (Fig. 14).

The forewing is normal except that in the interneural space between 4 and 5 the black spot of the outer black transverse fascia is united to the marginal black spot forming a conspicuous streak. The hindwing is normal. The black streak is present on the under side of the forewing.

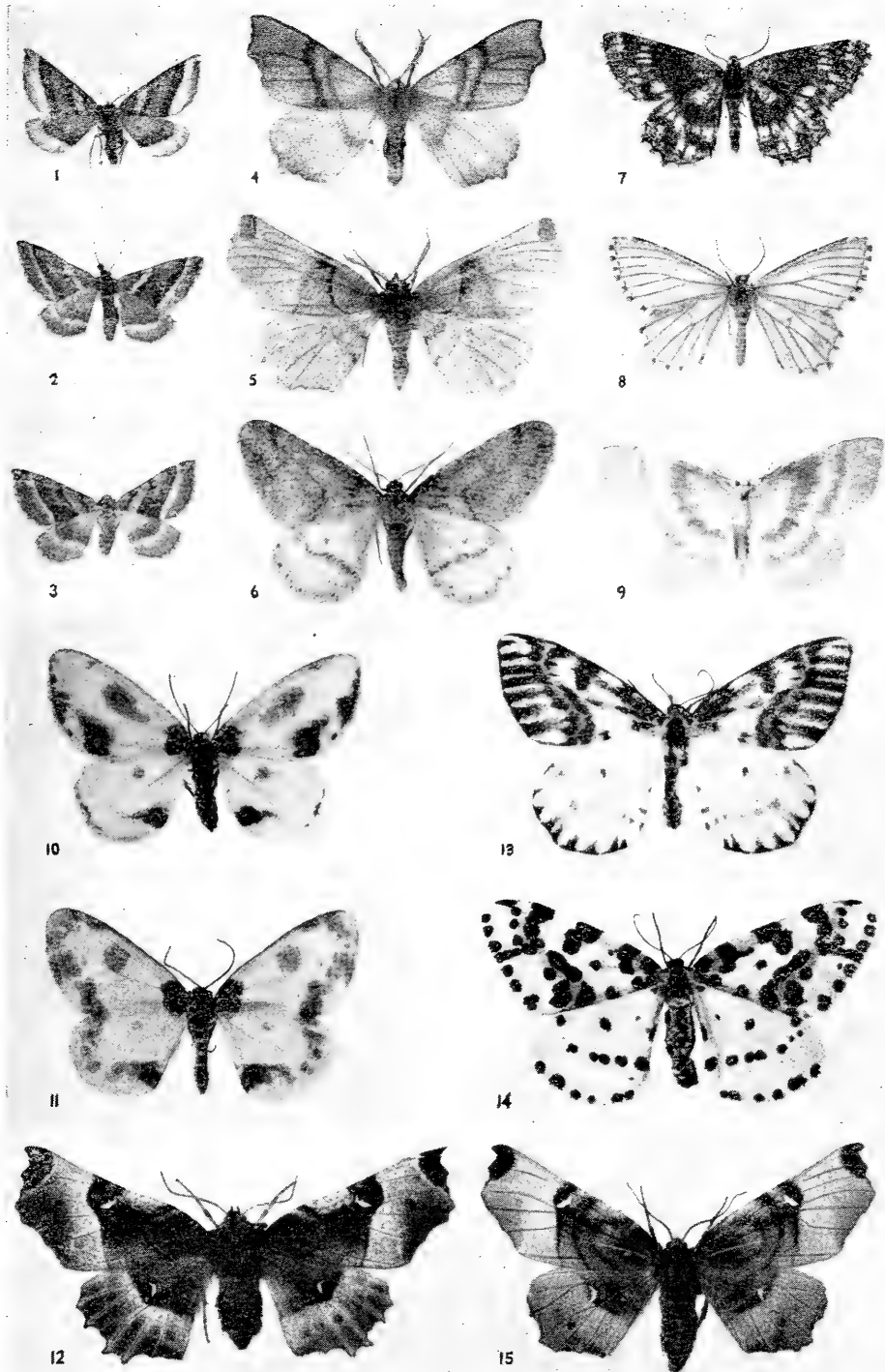
Type ♀ : N. London, C. W. Simmons. (Bright coll.) Rothschild coll.

Abraxas sylvata Scopoli *ab. purissima* *ab. nov.* (Fig. 10).

On both fore and hindwing the transverse fascia is entirely absent; the only markings on the forewing are the basal blotch, a pear shaped leaden coloured mark at the discoidal cell, a dot on the costa towards the apex, the blotch with a bluish centre near the anal angle with an oblique brown streak running upwards and outwards from it, and small dark marks on the middle of the termen. On the hindwing the fascia is absent, the only markings being the discoidal spot, the dark blotch near the anal angle with a short streak running from it, and three very narrow marginal marks.

Type ♀ : Chalfont Road, Bucks., 28.v.1908. Cockayne coll.

The aberration differs from *ab. pantaroides* Spitz in which the fascia consists of a row of short narrow streaks, more marked on the under than on the upper side.



Abraxas sylvata Scopoli ab. **circumnotata** ab. nov. (Fig. 11).

On both fore and hindwing the transverse fascia is displaced outwards and lies close to the margin. On the forewing the basal mark is normal, there is a circular discoidal spot, and two small marks on the termen.

Type ♂ : Loc. incog. (J. A. Clark sale, Feb. 1910). Gibbs coll. Rothschild coll.

Uabera exanthemata Scopoli ab. **lativittata** ab. nov. (Fig. 7).

The second transverse line, the median, is very much thickened and darkened forming a conspicuous band on both fore and hindwing; the third line, the postmedian is also very thick and dark.

Type ♂ : Scarborough (Stevens coll., 1900) Rothschild coll.

Paratype ♂ : Loc. incog. (T. Wilkinson coll., 1876) Rothschild coll.

Ellopiia fasciaria Linnaeus ab. **interrupta** ab. nov.

On the forewing the postmedian line is displaced towards the base and broken into two parts; there is a costal part extending to the median nervure where it turns to join the broken antemedian line and an inner marginal part extending to a point just above nervure 1 where it also turns basad to join the antemedian line; the two areas between the remains of the antemedian and postmedian lines are darker than the ground and are the only remnants of the median area. On the hindwing the transverse line is displaced towards the base.

Type ♂ : Lake Katrine, viii.1928, B. H. Smith. Cockayne coll.

Ennomos autumnaria Werneburg ab. **clara** ab. nov.

The usual speckles on both fore and hindwing are almost entirely absent, but the transverse lines are present.

Type ♂ : Dover, 1902, bred by J. Henderson, eggs from L. W. Newman. (Bright coll.) Rothschild coll.

Allotype ♀ : Ramsgate, eggs from Colthrup, bred 10.ix.1903. Rothschild coll.

The type is also ab. *triangularis* Cockayne with the antemedian and postmedian lines meeting on the inner margin.

Ennomos autumnaria Werneburg ab. **brunneata** ab. nov.

The head, thorax, abdomen, and wings are brown with no trace of the normal orange, the brown becoming darker towards the apex of the forewing and the margin of the hindwing; the antemedian and postmedian lines are plainly visible on the forewing and the discoidal spot is present. The under side is entirely brown.

Type ♂ : Sussex, ix.1951, bred by L. Hugh Newman.

Paratype ♂ : Same data.

The form appeared in a stock which had been inbred for some years and in which only normal specimens had occurred previously. The parents were both normal. The aberration is recessive.

It differs from ab. *schultzi* Siebert, which has an orange head and thorax, a variable amount of orange on the abdomen, orange at the base of the forewing, and in some cases orange on the costa and along the inner margin of the forewing. In ab. *schultzi* the hindwing also is orange along the costa and some of the nervures are orange, and the

underside is dark brown with the exception of the inner margin of both the fore and hindwing which is orange.

Ennomos quercinaria Hufnagel ab. **approximata** ab. nov. (Fig. 4).

On the forewing the antemedian and postmedian lines are abnormally close together.

Type ♂ : Epping Forest, L. B. Prout. Prout coll.

Ennomos quercinaria Hufnagel ab. **brunneata** ab. nov.

The ground colour is dark brown with the transverse lines showing very clearly as two dark lines on the forewing and one on the hindwing.

Type ♂ : Newcastle-on-Tyne, taken by G. Wailes. (Mason coll., Vauncey Harpur Crewe coll.) Rothschild coll.

Ennomos quercinaria Hufnagel ab. **subfuscata** ab. nov.

The ground colour is infuscated as in ab. *perfuscata* Prout, but with two clear yellow transverse lines on the forewing instead of very indistinct ones or none at all.

Type ♂ : Loc. incog. S. Webb coll. Figured Barrett, Pl. 292, fig. 1f.

Allotype ♀ : Kensington Gardens, London, 1872, H. P. Stocks. Cockayne coll.

Paratypes 3 ♀♀ : 1 ♀ Kingsbury, 17.viii.1865. (Bright coll.) Rothschild coll.; 1 ♀ Loc. incog. Rothschild coll.; 1 ♀ Loc. incog. (J. R. Wellman coll.) R. Adkin coll.

Prout describes *perfuscata* as entirely infuscated and this is the usual melanic form obtained in this century. It is recessive to normal *quercinaria*. *Subfuscata* was represented in some of the old collections, but does not appear to have been taken since 1880.

Deuteronomos alniaria Linnaeus ab. **grisescens** ab. nov.

The whole surface of both fore and hindwing is suffused with greyish brown, the same colour as the speckles of a normal female.

Type ♂ : Forres, bred ix.1915, Yates. (A. Horne, Willoughby Ellis coll.) Cockayne coll.

Deuteronomos erosaria Schiffermüller ab. **citrina** ab. nov.

The ground colour is citron or lemon yellow.

Type ♂ : Sussex, bred viii.1904, E. Miller. (Bright coll.) Rothschild coll.

Allotype ♀ : N. Kent, bred 1912, Horne. Cockayne coll.

Paratypes 1 ♂, 4 ♀♀ : 1 ♂, Bexley, viii.1902. B.M., 1937-45; 1 ♀, Yorks., bred 1891. R. Adkin coll.; 1 ♀, York, bred 1895, R. Dutton. Cockayne coll.; 1 ♀, Bedford, W. S. Brocklehurst. Cockayne coll.; 1 ♀, Watergate, Emsworth, Hants., 1893. Christy coll.

Selenia lunaria Schiffermüller ab. **lactimarginata** ab. nov.

The ground colour is pale, so that the transverse lines show very clearly; the whole area of both fore and hindwing outside the transverse lines is cream coloured with the exception of the apical mark.

Type ♂ : Chattenden, Kent, bred from ♀ taken 30.v.1892, stock from B. Bower. Banks coll.

Selenia lunaria Schiffermüller ab. **centripetala** ab. nov. (Fig. 5).

On the forewing the outermost transverse line is displaced inwards towards the base especially at the costa and lies about 1.5 mm. internal to the discocellular nervure, the discoidal lunule is absent. On the hindwing both lines are displaced towards the base and the outer one lies internal to the discoidal lunule, which is unusually small.

Type ♂ : Loughton, Essex, 30.v.1909. (Gibbs coll.) Rothschild coll.

Selenia tetralunaria Hufnagel ab. **postradiata** ab. nov. (Fig. 12).

On the hindwing there are whitish rays along the nervures, particularly conspicuous along nervures 3 and 4.

Type ♀ : Tring, Herts., bred 5.v.1946, by A. L. Goodson. Cockayne coll.

Selenia tetralunaria Hufnagel ab. **lacticolor** ab. nov. (Fig. 15).

The ground colour is very pale, cream coloured and slightly smoky, so that the transverse lines and the dark longitudinal line along the median nervure stand out very distinctly.

Type ♀ : Leicester, bred 11.iv.1948, by D. Watson. Cockayne coll.

Paratype ♀ : Same data.

Angerona prunaria Linnaeus ab. **nigrilineata** ab. nov.

On the forewing there is a black streak in the cell running from the discoidal cell spot towards the base.

Type ♂ : N. Kent, vii.1907, L. W. Newman. (Bright coll.) Rothschild coll.

Allotype ♀ : Loc. incog. Bred vii.1909. (Bright coll.) Rothschild coll.

Paratypes 3 ♂♂ : 1 ♂, bred vii.1909. (Bright coll.) Rothschild coll.; 1 ♂, Epping Forest, bred 1905 by L. W. Newman. Cockayne coll.; 1 ♂, Epping × Oxshott, 12.vi.1906, J. Greenwood. (Willoughby Ellis coll.) Cockayne coll.

Chiasmia clathrata Linnaeus ab. **obsoletissima** ab. nov. (Fig. 8).

There are no dark markings, the transverse lines are indicated by a slight darkening of the ground colour, which is pale orange or ochreous.

Type ♂ : Wilts., 1901, Philbrick. (B. W. Adkin coll.) Cockayne coll.

Allotype ♀ : Wells, Norfolk, 22.viii.1950, R. G. Todd. Cockayne coll.

Chiasmia clathrata Linnaeus ab. **albissima** ab. nov.

The whole of both fore and hindwing is pure white with no trace of markings; only the nervures are visible.

Type ♀ : Wilts., 1909, Philbrick. (B. W. Adkin coll.) Cockayne coll.

Chiasmia clathrata Linnaeus ab. **lacticiolata** ab. nov.

The fringes are the same colour as the ground colour of the wings; the usual chequering is absent.

Type ♂ : Chattenden, 12.vii.1895. Cockayne coll.

Chiasmia clathrata Linnaeus ab. **lativirgata** ab. nov. (Fig. 9).

There is a broad blackish brown band across the forewing, which includes the first, second, and third lines; the subterminal line is very much broader than usual. On the hindwing there is a very broad transverse band and a broad subterminal line like that of the forewing.

Type ♂ : Loc. incog. Rothschild coll.

Paratype ♂ : Loc. incog. Rothschild coll.

Erannis marginaria Fabricius ab. **curvilineata** ab. nov. (Fig. 6).

On the forewing the basal line is present, but the antemedian line is absent; the postmedian line runs obliquely inwards as far as nervure 2 and then curves sharply outwards to the inner margin. On the hindwing the transverse band is unusually distinct. The alteration in the direction of the postmedian line alters the whole appearance of the insect.

Type ♂ : Wimbledon Common, Surrey, 20.iii.1926, taken by E. A. Cockayne.

Moths and Wasps

By Dr. NEVILLE L. BIRKETT.

The presence in my moth-trap of numerous moth wings unattached to their erstwhile bodies has for some time been a problem only partially explained and then only by a process of guess-work. Birds, especially sparrows, are active predators in the neighbourhood of my trap, numerous spiders find their way into the container and eke out a satisfactory living from the abundant insects there, burying beetles (*Necrophorus* spp.) are often present, while last, but by no means least, there are those banes of a well-known writer on Lepidoptera—earwigs. It was thought, not unnaturally perhaps, that the presence of these predatory creatures was quite adequate to explain the presence of all the wings there might be in the trap. The occasional *T. pronuba* had been noted as an object of gastronomic interest to a *Necrophorus* sp. Sparrows are often seen on the superstructure of the trap and have often been seen capturing insects escaping. Some of the wings of these insects drop into the collecting cone and find their way into the container by gravity or draught. But these kinds of rarish incidents apart, the evidence was almost all circumstantial. There were the wings, there were the predators

On July 24th, however, further evidence was forthcoming and a culprit was found *flagrante delicto*. The culprit on this occasion was a common wasp—*Vespula vulgaris* L. On lifting the cone from the container to inspect the night's captures I noticed a wasp flying round the inside of the trap and apparently inspecting the various moths at rest on the sides (I use no anaesthetic in the trap so all were alive). Suddenly the wasp pounced on a nice specimen of *Phalera bucephala* L., grasping it by the jaws in the mid-abdominal region dorsally. Whether or not there was any attempt at stinging of the Buff-tip I do not know because the sequence of events was too fast to follow clearly. Both insects dropped to the floor of the trap where the moth put up a violent struggle. After about a minute the Buff-tip escaped from the clutches

of the wasp and flew up to the opening of the trap. It was closely followed by the wasp which continued to make darting attacks at the moth in flight. These were not successful and as soon as the moth was clear of the trap the wasp gave up the chase and returned to exploring the sides of the trap.

The next victim fared less happily. This time a fine specimen of *Pelurga comitata* L. was inspected and suddenly pounced upon. Again a struggle ensued, but this time there was no doubt about the result and after a few seconds only the moth was on the floor of the cage motionless. Then the wasp methodically bit off the wings to their bases, grasped the body with mouth and legs, and flew rather slowly and with some difficulty out of the trap and away. It is a pity to have to report that I could not stay in the neighbourhood of the trap for the next hour or so to see if any further such activity occurred. It would have been interesting to see if the wasp returned and when it returned. Did other wasps come? (marking experiments would have been interesting), and many other questions come to mind in connection with the activity.

The next morning a similar scene was witnessed. Again a wasp was in the trap when I took the cone off and it was busy inspecting and attacking various moths. This time its activities did not meet with success while I had the creature under observation. Various species were attacked and all managed to escape by flight and all were attacked again while actually flying to their freedom. Among those seen to be attacked were:—*P. populi*, *C. elinguaris*, *L. pallens*, *L. impura*, *N. triangulum* and *T. pronuba*. One *pronuba* was attacked several times before getting out of the cage to safety. Numerous *A. caja* were seen to be inspected but none was attacked. Inspection consisted of the wasp hovering about an inch away from the victim without necessarily pouncing.

Of wings noted detached from their owners the following may be mentioned without necessarily claiming that they are all the result of wasp activity:—*A. grossulariata*, *A. exclamationis*, *P. gamma* and numerous of the smaller Geometers of 'Carpet' size. From my few observations it would seem that a big moth if attacked would get away fairly easily. Small moths readily fall victim to attack.

There are obviously many observations that should be made concerning this wasp activity and I hope I may get the opportunity of this in the next few weeks. The object of this note is to draw attention to the subject in the hope that anyone else noting similar behaviour will put his observations on record.

Kendal. 2.viii.52.

Notes from the Journal of a Victorian

By S. G. CASTLE RUSSELL.

I well remember my first visit to the famous Abbot's Wood near Eastbourne which some time before had been discovered by J. T. Carington, sometimes editor of *The Entomologist*, which he claimed to possess more species of Lepidoptera than the New Forest. In consequence the Wood became well frequented by entomologists.

My first visit was the week-end of 4th-6th June 1892. I stayed at the Junction Hotel opposite the station and walked along the road to

Hailsham for some twenty minutes and turned into a lane which bordered the famous Whitefield, which was an open expanse of rough grass and scrub and formed a meeting-house for all the species of butterflies that occurred in the wood at the appropriate times. Later on I found there was a path across a meadow which considerably reduced the distance; but it was usually inhabited by a huge white bull which was fond of ambling after anyone passing along the path, and more than once I have had to sprint when he suddenly appeared from nowhere. The owner of the animal was a farmer named Elphick who was a friend of the proprietor of the hotel and was a powerful man who could throw a bull for ringing purposes single-handed. He and another well-known local farmer used to turn up on Saturday evening and play cards with myself, the landlord and the friend who invariably accompanied me. Of course, if the bull was anywhere in the vicinity of the path it was best to go the long way round—at least I thought so.

On the 4th June, on entering the Whitefield, I found it full of *Argynnis euphrosyne*, *A. selene* and *M. athalia*. I almost immediately netted a good form of *selene* and then entered a narrow ride which at the entrance was thick with *euphrosyne* but then led through a long distance in the shade. Just before emerging into the sunlight I saw something very dark fluttering which I secured and which turned out to be a *euphrosyne* ♂ with the upper side practically all black and a nice under side with streaks of pearl. This I placed in the cyanide bottle and then observed two collectors busy in a small marsh area examining *selene*. These two turned out to be W. H. Tugwell and G. T. Porritt, two very well-known middle aged collectors. I at once proudly showed them my catch. Nothing encouraging was said and I think they thought some specimens with a small area of white on the wings were much more desirable. One of them, I think it was Tugwell, pointed out that the insect was still alive in the bottle, but as it had been there for only a minute or so and the cyanide was not very strong the fact was not surprising, but his tone implied censure—at least I took it as such. There was also a mumble about the luck of beginners . . . Later on I showed these two aberrations at the South London Society and there arose a discussion as to whether the second insect was *euphrosyne* or *selene*. Both were on the wing in abundance at the time. Frohawk considered the specimen to be *euphrosyne* and of course this caused Tutt to say it was *selene*, as he was always "up against" Frohawk. Later Tutt had the two insects figured in the *Record*. Why there was ever any question as to the identity of the specimen I cannot imagine as there cannot be the least doubt about it being *euphrosyne*.

At this date *M. athalia* could be met with in odd corners all over the Wood but only in numbers in a copse adjoining the Whitefield. It did not survive very long and during the following years was met with only occasionally and finally it disappeared, the chief reason to my mind being the failure to clear the wood and in consequence the disappearance of the foodplant, cow wheat. There is no doubt that at one time the species was as abundant there as in the Canterbury district. The copses in the latter district are cut down regularly to supply the sticks for chestnut fencing and in consequence cow wheat grows very thickly. There is here an alternative foodplant which the larvae will eat if deprived of cow wheat—I do not remember its name but the

late L. W. Newman pointed it out to me and I fancy it was Germander Speedwell (*Veronica chamaedrys*). Mr. P. B. M. Allan's useful little book also includes wood sage, two species of plantain, and foxglove. These are readily eaten in confinement, but personally I have never found the larvae except on cow wheat and that was the only plant I ever found them on in Abbot's Wood.

The Unexpected

By THE VISCOUNT BOLINGBROKE.

Although *Limenitis camilla* L. is the only species of British butterfly I have ever seen fly through a thorn hedge and emerge the other side apparently unharmed, to associate it with a doormat would seem an absurdity. Yet such was once the case at my home in Wiltshire, when, on opening a side door of the house, I was astonished to see, crawling on a fibre mat inside, a specimen of *L. camilla*. Despite the late date (27th July) the butterfly was in fairly good condition. The strange factor in the case was that the immediate locality was presumably totally unsuited to the requirements of the insect in any of its stages, since the surrounding woodlands consisted of beech, elm and chestnut with here and there a sycamore, a few ash, a Scots pine or two and an odd holly. The undergrowth was made up of box, elder, butcher's broom and clumps of laurel. Of honeysuckle there was none; neither was there any bramble. Surely a most unlikely habitat for *L. camilla*.

Aglais urticae L. is such a "domestic" butterfly that its somewhat sluggish appearance one late winter's day in the centre of a Cotswold town might well have been due to the spring cleaning activities of some housewife. What attracted my attention to the butterfly, however, was the behaviour of a tabby cat which was chasing the insect along the length of the pavement in the warm sunshine, aiming a blow at it whenever it dipped to within reach. Fortunately, the butterfly deftly avoided every prod by the cat until puss tired of the chase.

To be afforded the opportunity of even a glimpse of *Nymphalis antiopa* L. on the wing in this country is not easily forgotten, but to be favoured with its elegant presence on the wall of one's house is an event indeed. Such an occurrence happened to a friend of mine in South Hampshire three years ago. The butterfly, according to my friend, was in a restless frame of mind, flitting round his greenhouse, thence to encircle his house and back to the greenhouse again. Finally it settled high out of reach on a wall of his house. My friend being a collector, little imagination is required to appreciate his possessive desire in such a situation or his anxiety in contriving to secure the specimen in the shortest possible time. The butterfly was well up out of reach being, in fact, just under an upper storey window, and was hardly likely to tolerate for long the evil attention of this menacing human.

Unable to resist a closer view of the prize and possibly a lightning stroke with his net in the bargain, my friend rushed indoors and, bounding upstairs, came to a dead stop in front of the open window of his bedroom. Inch by inch he moved his head through the window. Yes, it was still there, the "Beauty", a yard or so beneath the ledge! But it would be madness to aim at it in such a situation, even if he

could have got the net forward enough unseen to make a shot. There was nothing for it but to withdraw his head equally slowly, dash downstairs—in which process he was almost flung headlong by getting entangled with the family cat which had followed him half-way up—and seize a ladder.

This he did and, with the utmost care, wiggled the ladder gently and deftly into position against the wall. The insect obligingly remained. Rejecting an impulse to fix anything longer than a six feet beanstick to his net on grounds of control, my friend mounted the first five rungs of the ladder, a perfect study in slow motion. The seventh rung, he told himself, and the ambition of a lifetime would be within his grasp. With eyes fixed on the coveted objective, now only some eight feet above him, his foot uplifted feelingly in contact with the sixth rung, when, horror of horrors! a dark cloud loomed up and in seconds the light was dulled.

It was now or nothing. With one foot on the seventh rung he glanced down at his net which had become caught by a splinter in the side of the ladder. And then as he levered himself on the final rung, hardly daring to bring the net into striking position, he looked up. Where the butterfly had been, there was now a blank on the wall . . . *Antiopa* had gone for ever.

The extensive immigration of *Vanessa cardui* L. early this year just before snow came to South-West England reminded me of an occasion, this time late in the year, also just before a cold spell, though lacking the snow, when I noticed a solitary *V. cardui* imbibing at the flowers of a winter jasmine. This occurred on 17th November 1948, a fine sunny day.

An insect whose habits and numbers have provided me with surprises in the past is *Strymonidia w-album* Kn. On a sunny afternoon during the first of three summers in which I had this butterfly under observation in North Wilts., I counted no fewer than fifty-four, all on the flowerheads of garden daisies. The second year only a very few appeared. In fact I saw no more than a dozen, and these were spread wide apart on delphinium and jacob's ladder.

During the third year, there was hardly one in the garden, but to my surprise I found that they had taken more or less to life on the ground, for on several occasions they were seen crawling on paths and about the drive in bright sunshine. They were quite numerous and at first I almost trod on individuals before realizing what they were. One specimen I found crawling up a window pane indoors.

Quite the most delightfully enticing as well as conveniently situated var. in a mild state was an occasion when, in looking out of my cottage on to a small bed of *Cosmos*, I noticed what turned out to be a bi-coloured *Cobias croceus* Fourc. In this example the right forewing was white, the left primrose. The orange spot on the right hindwing being broken up: that on the left entire. Of the antennae, the right, though clubbed, was only half the length of the left, which was normal.

Another surprise, I remember, which was positively inviting capture was a fine *Acherontia atropos* L. ♀ ensconced on the top of a gatepost in the Isle of Wight in broad daylight.

The most amusing incident involving a lepidopterous insect I have ever known was the part played by a certain *Gastropacha quercifolia* L.

The moth, in some way, had attached itself to the lapel of a woman's coat, and all unknown to the wearer was treated to a sixpenny bus ride to a small market town.

After a round of shopping the "hostess" went into the post office, where *G. quercifolia*, still firmly established, attracted the notice of a clerk on the other side of the grille. As the young woman looked, the "leaves" apparently moved, so she ventured to draw the customer's attention to her queer looking ornament which appeared to be alive.

Looking down, the wearer threw up her hands in dismay. "Ugh", she exclaimed, "whatever is it?"

Quercifolia moved again.

"Oh, I hate these creepy things", she went on; "wherever did it come from?"

The clerk disappeared, to return in no time with the inevitable matchbox into which the offending object, on being roughly unseated, was duly and unceremoniously bundled.

With that the woman vanished, the onlookers went their ways, and normal business was resumed.

The "Block" Method of Setting : A Criticism

By W. E. MINNION.

Firstly let me say that I am in agreement with the preamble in the Old Moth-Hunter's article of the July-August issue entitled "Thoughts on Setting Lepidoptera" with the exception that while setting takes a *lot* of time I doubt if it is a *waste* of time. In fact, the time taken is probably of value as a deterrent to the mass slaughter of insects; and to a youngster starting our hobby—usually as a collector pure and simple—the care and trouble expended in setting is excellent grounding for careful work in all phases of entomological research when collecting solely as collecting has given way to a definite and scientific investigation.

When it comes to method, however, the arguments put forward against the use of setting boards are not convincing nor do I find those in favour of blocks any stronger. The danger to insects already on the board, if it really exists, is exaggerated. The insects are usually those farthest from the worker and careless movements of the hand, etc.—while they should have no place in our technique—seem just as likely to knock a few blocks on to the floor as to damage set specimens on a board. Generations of pin holes should never accumulate on the setting boards of careful men. Repapering is so easy in the slack winter months and if the mite problem is present, what about the pinholes in the groove in the blocks?

When insects are removed from the setting boards I assume most people remove a whole boardful at once, not odd insects, so the danger on this account is negated.

The saving of time by using the individual blocks is emphasised though I am sceptical on this issue and even if it is established that the block method of setting is faster the advantage must be more than offset by the enormous loss of time that surely results from having to unwind each insect separately, remove it from the block and then wind

up the wool again for storage as compared with removing a number of insects from a board—and how much more convenient it would be for labelling to have a board of insects all taken at the same time and place all available together! In connection with the removal of insects after setting it would appear that pectinated antennae would be in some danger of being removed accidentally by reason of their getting caught in the wool if one uses the block method.

If one wished to exhibit a rarity surely one would wait until it was off the board and could be seen to advantage rather than to show it wrapped up in wool or covered with paper strips. If, however, it is regarded as essential that the insect should be exhibited earlier, transparent paper or cellophane strip on a setting board would enable the insect to be seen far better than would be possible if it were on a block with the wool wrapping.

Why should drying be more rapid on blocks than on boards? The body of an insect dries last and this is equally exposed to the air in either method.

No time need be wasted in sorting insects into sizes before setting on boards. It is a wise precaution to pin all insects first and when this is done they can be grouped into sizes at the same time. Further, it is then possible to set the smaller or more fiddley insects first when the worker is fresh leaving the larger and easier ones till last when he is perhaps tiring a little, and he is not faced with having to pick out the appropriate size of block for each insect.

The following possible disadvantages of the block system are suggested. It takes up more space. Twelve blocks each $1\frac{3}{4}$ " long for species ranging from *Polyommatus icarus* to *Antitype flavicincta* occupy a length of $16\frac{1}{2}$ ". These same insects would occupy no more than 12" of a setting board.

The blocks would be much less steady to work on than a board and while both hands are occupied with setting needles it would be necessary for them to be steadying the block as well. There is no difficulty on this account with boards as the hand holding the strip can easily steady the board at the same time.

The blocks would not be as convenient for storage, especially on holiday, when a setting case with boards is so handy.

The method of construction is a bit tedious and after all boards can be manufactured just as easily, without the need for notches, etc., but setting boards are not costly and, with ordinary care, last a lifetime so why not buy them.

Finally the Old Moth-Hunter asks "any questions?"

Why do about 99% of present day lepidopterists use setting boards?

Field Notes

What a revolution the mercury vapour lamp has brought about in our knowledge of the dispersal and frequency of our 'rarer' Lepidoptera! Species hitherto regarded as unlikely ever to grace our cabinets to a greater extent than an odd specimen or possibly two are now known to be widespread and actually common. *Acrionicta alni* is taken in suburban gardens. *Xylomiges conspiciellaris* has turned up as commonly

as an *Orthosia*. Of the 'Scarce' Prominent a correspondent has taken a couple of dozen in two nights; and so on and so forth. Presently in the auction-rooms *Harpyia bicusps* will be rated no higher than a *furcula*.

A number of reasons have been suggested for our failure to discover these 'rarities' by ordinary field work but none of them is satisfactory. The larvae of *alni*, *carmelita*, *ruficornis*, *dodonaea*, do not escape our observation by feeding high up on the foodplant: they normally inhabit the lowest boughs where of course they are least likely to incur injury in strong winds. Every competent field worker with thirty and more years of experience to his credit has found them by searching. The fact that the imagines of these species eschew the petrol lamp cannot be a reason because many of the best and most successful field workers never used a lamp of any kind in their lives.

There are a great many species which the field worker has never, in the course of a long lifetime, found in the imaginal stage in the wild by searching. Such species pass the daylight hours among the debris at the roots of a hedge and in similar places impossible to search. But their larvae are often as well known to the field worker as his hat; and so, quite often, are their pupae. Obviously no one can expect to find the pupa of *alni* or of any other species which pupates inside a woody stem or tree-trunk; but in one stage or another each of these 'rarities' has always been available to the field lepidopterist. How, then, are we to account for this sudden revelation of their frequency and dispersal?

The fact of the matter seems to be this: that none of these 'rarities' ever *was* rare and could always be taken by the adept field worker—the man who never uses a beating-tray or a petrol lamp because he is more successful with his eyes and hands, the man who has the god-given gift of *observation*. Yet observation by itself cannot make a great field naturalist. It can make an astronomer, a geologist, a taxonomist, a physician, a Sherlock Holmes if you like; but without an additional *something* it cannot achieve supreme success (though it may beget proficiency) in the field. That 'something' is a *flair for wild animals*. In every generation, among lepidopterists in this country, there are a few such men, but always they are to be counted on the fingers of one hand. Richard Weaver was such a man (said Stainton of him "his captures . . . mark an era in the Entomology of this country") and so were Charles Stuart Gregson and Harpur Crewe. To men such as these the 'rarities' are not uncommon.

So the m.v. lamp has done no more than show up our own shortcomings as field workers. If butterfly-nets and beating-trays and petrol lamps were prohibited we should learn a deal more about the life-histories of the moths we hunt, and thereby we should become more proficient collectors. It is a sad thought; few of us are "gentlemen of leisure" and so we must needs fill our cabinets and store-boxes in the most expeditious way. Perhaps the m.v. lamp may prove to be an even greater blessing than we account it at present: our lepidopterists will fill their cabinets so quickly that from sheer *ennui* they will turn to the study of some of the less well-known Orders. . . .

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Cryptoblabes bistriga Haw. The larva of this delicate little species may be found feeding between two united oak leaves in September, being full-grown about the end of the month. It is rather like a very small and slender larva of *Phycita spissicella* Fabr. but of a more elegant shape, with a better proportioned head. The sides are pale with a wide brown dorsal marking. It spins, as a rule, in captivity between two leaves and pupates at once. This little moth varies considerably in colour and markings; the white bands are sometimes almost suppressed. Those I bred from near Faversham were of a purplish-brown hue whilst others, bred from Bexley larvae sent me by Mr. L. T. Ford, were much blacker in tone.

Harpalia ferrugalis Hübn. may be found in September at ivy bloom and occasionally at sugar. Its numbers vary greatly from year to year and it is almost certainly largely reinforced by immigration, if not entirely a migrant. In 1947 I disturbed a great number from a stubble-field in Essex when taking *Rhodometra sacraria* L., which it appeared to have accompanied to this country.

Phalonia badiana Hübn. Seed-heads of burdock should now be collected for the nearly full-grown larva of this Tortrix. They should be kept in a bag in the open air, as the insect does not pupate till May and will spin up without difficulty either between the seed-heads or, more rarely, in the larval habitation. The bag may be emptied into a breeding-cage at the end of May and the moths will emerge in the next month.

The second brood of *Peronea lorquiniana* Dup. comes freely to light towards the end of the month in its chosen haunts, the Broads, Wicken, etc. The moth may also be bred from flower-shoots of *Lythrum salicaria* collected in the second week in August. The late Mr. W. G. Sheldon in his masterly paper on the Peroneas stated that in his experience the form with the conspicuous black dot on the forewings chiefly belonged to the second brood. This does not agree with my own observations, every specimen I have taken of the spotted form has belonged to the July brood and I have taken no other at this time whilst the second brood examples have been exclusively of the plain form, with a sprinkling of the rare one with the diagonal brown line across the wing. My experience agrees with that of my old friend the late Mr. B. A. Bower, who also first drew my attention to the curious parallel in variation between this moth and *Chilodes maritima* Tausch; both have plain types, a form with a heavy spot (double—*bipunctata*—in *maritima*) and a banded one (*wismariensis* in the noctuid).

Eucosma ophthalmicana Hübn. may be beaten from aspens or, better, found sitting on the trunks of the younger trees, towards the end of the month. It is rather skittish and difficult to box and I have found that the easiest way to catch it is to hold the net near it and just below, and give the back of the tree a sharp tap, when the moth will usually jump straight into the net.

Eucosma sordidana Hübner. may be beaten freely from alders in many places towards the end of the month and in early October. This insect is much more generally distributed than is usually supposed, as collectors often make the mistake of looking for it too early. It flies freely when disturbed on a warm day.

Eucosma maritima Westw. (*candidulana* Nolck.). The little spotted larva of this moth may sometimes be found freely on *Artemisia maritima* towards the end of September, spinning in the seed-heads. It does not pupate till the spring so must be kept out of doors through the winter. Some old stems and dead leaves of the foodplant should be put in the bottom of the bag for it to spin in. It appears to prefer the plants growing on the higher parts of the sea walls on saltings.

Practical Hints

Now is the time to beat oak and beech for larvae of the Hook-tips—*Drepana binaria* and *D. cultraria*. They are easily collected from the lower branches on the south and west sides. The birch-eating one, *D. falcataria*, should always be obtained by searching. The larva loops up the edges of a birch leaf to form a gulley, in which it reposes by day, so is quite easily seen.

Cirrhia gilvago is usually accounted a local species though often abundant where it occurs, and certainly it "has its years". One such year, in Hertfordshire, was 1938, when it appeared at our sugar during September in scores nightly, having been absent for fifteen years previously. On 20th September that year—a warm night with slight drizzle—it kept on arriving at sugared posts beneath a row of elms from dusk to midnight. We could have taken a hundred.

That year, 1938, was a good year also in our district for *Peridroma porphyrea* (*saucia*), *Agrotis ipsilon* (*suffusa*) and *Antitype flavicincta*, which came nightly to sugar, during late September, in quantities. *A. flavicincta* has been quite a rarity ever since, though it is common enough elsewhere. To our mind, sugaring in September is more profitable than in any other month of the year, at least in the southern half of England.

A few years ago *Catocala nupta* started to extend its range northwards and westwards. Collectors who live in the Midlands and West Country and have not yet taken this fine moth should spread their sugar on pollard willows in watermeadows and on other low-lying ground. Emergence is usually spread over two months and we have frequently seen freshly emerged specimens in the last week of September. This species seems to have an unusually keen nose for sugar: we have found it in numbers on sugared firtrees on the top of a ridge a hundred feet above, and nearly half a mile from, watermeadows.

September is a very profitable time to search aspen. The second broods of *Populus*-eating Prominents are to be had, as well as *Clostera curtula* (which one finds between closely-spun leaves), *Tethea or* and *T. ocularis* (ditto), and *Harpyia hermelina* (*bifida*), which rests on the upper side of the leaf. Small bushes of small-leaved willows should be

searched for *H. furcula*. This larva is usually near the top of the bushes and is not too easily seen—at first. It feeds by day so is most likely to be found on the edge of a leaf. Often little bushes growing out in the open in waste places are favoured by the female moth, sometimes sallows in hedges.

That fine moth *Rhizedra* (formerly *Calamia*) *lutosa* comes readily to light in September, though we have never seen it at sugar. It has a fondness for street lamps in small towns and villages where there is swampy ground in the neighbourhood and can also be found shortly after dusk by searching the reeds in ditches. The moth seems to rest on the reeds until rather late at night, when it takes wing—often for the nearest lamp.

Before the third week of September the seed-pods of red campion (*Lychnis dioica*), growing preferably in and on the fringes of woods, should be gathered for larvae of *Perizoma affinitata*. *P. flavofasciata* may be taken at the same time.

Notes and Observations

VANESSA CARDUI L. IN THE CHANNEL ISLANDS.—The remarkable migration of *Vanessa cardui* this year has already been recorded in this journal and elsewhere and I can add one other record. While on holiday in Jersey in early May I visited Mont Orgueil castle and remarked to the caretaker on the number of Painted Lady butterflies flying in the grounds. She was a naturalist and knew the English butterflies well and at once told me that this butterfly had been very numerous at the end of February, the earliest she had ever seen them in the Island and she had assumed an early migration but had not realised its significance. I myself like to think of the Channel Islands as "stepping stones" (rather large ones I admit!) for migrant butterflies on their journey to our shores. When I lived on Sark for nine months in 1931 I was able to write and tell my father about certain of the migrant butterflies that I had seen, and often they were not reported in England until a week or two later.—L. HUGH NEWMAN, the Butterfly Farm, Bexley, Kent.

VANESSA CARDUI IN ITALY.—The appearance of *V. cardui* followed its usual course here this year and their numbers, as compared with the great scarcity of butterflies of all sorts, were rather large, but not unusually so. There was a first arrival about the middle of April, and a second one at the beginning of June, belonging respectively, so far as I know, to the second and third generation in North Africa. Some of these here evidently rested a bit, but they soon proceeded northward. A few, as usual, settled down and I saw them every day for some time in my artichoke fields and in other localities. The offspring, freshly emerged, pink and crimson, made their first appearance at the beginning of July, and there are a few in my garden, evidently intending to stop. Every day they get more and more discoloured.—ROGER VERITY, Caldine, Firenze. 26.vii.52.

VANESSA CARDUI L. IN HANNOVER.—*Vanessa cardui* has been much commoner here than in previous years, even than in 1946 when I saw it for the first time in this district. The first specimens I could identify were noted on 17th May, in worn condition. On 13th June I noted one in the town, flying rapidly to the north. About six to eight specimens were seen in the fields on 17th June, all in very poor condition, but apparently not migrating. On 5th July we found the first fresh specimen and a friend of mine detected a nearly full-fed larva on thistle. Another fresh *cardui* was seen in the fields on 26th July, and on the following days I observed many more, but in all cases single specimens.

The Diepholz district seems unfavourable for migrators as the surroundings are moors and fens. On the whole, we have had a bad summer, with a few hot days followed by longer spells of cold and wet weather. Even *Plusia gamma* L. has not been common up till now. As of course you know, Diepholz is a small town between Bremen and Osnabrück.—GERHARD HESSELBARTH, Romlingstrasse 8, Diepholz, Hannover.

[*Vanessa cardui* L. seems to have reached the Continent somewhat later than England this year. A correspondent in the South of France reports "many thousands" on the Mediterranean seaboard and also "some thousands" going through the streets at Genoa, being seen later in the Arquata Scrivia valley north of that town. All these were *after* the invasion of England. Hence it would appear that the first migration from North Africa reported by Brigadier C. G. LIPSCOMB (*Ent. Rec.*, 64: 168) followed a westerly route, *i.e.* across Spain.—Ed.]

MACROGLOSSUM STELLATARUM L. IN 1952.—This moth was seen at Plympton, South Devon, on 8th June, 9th June (2), 10th June, 12th June and 19th June. While at Ventnor, Isle of Wight, from 21st June, it was common at valerian.—R. G. HAYNES, 5 Lucas Lane, Plympton, near Plymouth, S. Devon. 5.viii.52.

MACROGLOSSUM STELLATARUM L. IN BEDFORDSHIRE.—With reference to the report of *Macroglossum stellatarum* (*Ent. Rec.*, 64: 217) I saw this insect, on 15th July, at Yelden in the extreme N.E. corner of Bedfordshire and a few miles S.E. of Rushden. It was hovering over a large patch of the common blue vetch. I had no opportunity of examining it but my impression is that it had seen better days.—Major W. A. C. CARTER, R.A., Briarfields, Sandels Way, Beaconsfield, Bucks. 3.viii.52.

MACROGLOSSUM STELLATARUM L. IN NORTH SOMERSET.—In response to the Editor's request in *Ent. Rec.*, 64: 217, my observations of *Macroglossum stellatarum* L. in the neighbourhood of Bath may be of interest. The first of the season was observed hovering over catmint (*Nepeta*) about 4 p.m. on 20th June. A second was seen feeding at the same border on the 21st, and five more on the 26th. The species was then seen at least once daily until the end of June, and it was still frequent on rockeries and herbaceous borders until mid-July. On 23rd July a worn ♀ was observed hovering close to several clumps of *Galium* growing on a wall, and was noticed to be ovipositing. Four eggs were laid, two of which were on the wall. By further searching seven more eggs were found, two more of which were on the stone. Of these eleven I

retained five, one of which failed to hatch, the others hatching, one on 26th July and three on the 27th. The larvae are now in their fourth instar; three are of a very dark olive green in ground colour, while one is still a bright leaf-green.—J. E. THORPE, 20 Kendal Green, Kendal, Westmorland. 12.viii.52.

MILTOCHRISTA MINIATA FORST. AB. CROCEA BIGN. IN KENT.—Of this rare form in which the normal pink is replaced by yellow I took a male specimen in fine condition at light at Ham Street on the night of 27th June 1952. This form has been recorded from the New Forest at least twice, but so far as I am aware not previously from Kent.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 10.vii.52.

FOODPLANTS OF BENA FAGANA FAB. (PRASINANA L.).—During the course of beating operations this year I have taken larvae of the 'Green Silver-lines' from lime, elm, and blackthorn (one from each). Has anyone else found the larva of this species on these plants, as they are not given as foodplants in South's *British Moths*? I don't suppose the species is a general feeder, but perhaps it is extending its range of foods.—R. J. R. LEVETT, Netheroak, Stockcroft Road, Balcombe, Sussex. 31.vii.52.

IS GYMNOSCELIS PUMILATA HÜB. A MIGRANT?—With reference to recent notes (*Ent. Rec.*, 64: 121, 152, 179) on the early appearances of *Gymnoscelis pumilata* Hüb. may I be so bold as to suggest that this is a migrant species? My reasons for suggesting this are:—(1) It is continuous brooded in the Mediterranean region, as are the majority of our migrant species. (2) I have taken it on two occasions in the middle of the Mediterranean Sea in company with other migrant species. (3) The larva is markedly polyphagous, a character it shares with many migrant species, and which is of decided advantage to travellers whether lepidopterous or lepidopterist. (4) Though normally nocturnal, it is perfectly capable of flying in bright sun-light, under which circumstances I have taken it on several occasions, including the two captures at sea. This capacity to fly by day and night is essential to trans-oceanic migrants and has been observed in many migrant species. (5) It is of wide distribution in the Western Palaearctic and, as far as I am aware, forms no subspecies in Europe or North Africa, and a few specimens I have from the Middle East show no marked differences from their western brethren. This character it also shares with established migrants.

The above behaviour pattern, plus a few characters of lesser moment, are common to at least the majority of our migrants, as well as to several other species which may well be migrants. I suggest *G. pumilata* is at least a reinforcing migrant.—H. M. DARLOW. 26.vi.52.

STRIDULATION OF HAIRSTREAK PUPAE.—The other day I noticed a distinct sound which appeared to come from some pupae of *Strymon w-album* Knoch which I had in a cage. I can best describe the sound as low-pitched, rasping and scratchy. The cage contained nothing except 24 *w-album* pupae resting on crumbled peat. The pupae themselves were either on withered leaves of the food-plant or in the angle at the top or bottom of glass-topped tins.

I tried hard to see which pupa was making the noise, but I was quite unable to do so. Moreover, I failed to make out what stimulus

was required to induce the noise. I think that the initial stimulus was caused merely by removing the lid of the cage, but no amount of subsequent movement of the lid, shaking the cage or other disturbance had any effect. I tried breathing on the pupae and stroking them with a camel-hair brush with no audible result.

I should, perhaps, emphasize that there was nothing else in the cage apart from the pupae which were in the process of 'hatching.' Several imagines had already emerged, some pupae had turned black and the butterflies came out during the following 24 hours; yet others did not hatch for several days.

Myself, I have no doubt that the noise was made by the pupae. I suspect that it was caused by a slight sideways movement of the abdomen, enough to cause the bristly hairs to scratch over the surface on which the pupa was lying. It may well be a defensive mechanism because the noise was quite loud enough to deter a bird on the look-out for a snack.—W. A. C. CARTER, Briarfields, Sandels Way, Beaconsfield, Bucks. 26.vi.52.

[Stridulation by pupae of this Family has long been known. There was a Note on the subject in the *Ent. mon. Mag.* so long ago as 1877 (14: 137), to which the Editors appended a further note showing that stridulation by the pupa of *Thecla rubi* L. had been pointed out by Kleeman of Nuremberg in 1774.—ED.]

A MELANIC *LYCAENA PHLAEAS* LINN.—I took a very nice melanic *L. phlaeas* ♂ last week, forewings almost entirely intense black, and hope to show it at the South London exhibition in October. Moths have come to light well, and *Vanessa cardui* is widely distributed over this whole area.—S. H. KERSHAW, Alderman's Place, Aspley Heath, Bletchley, Bucks. 5.viii.52.

EVERES *ARGIADES* PALL. IN DORSET.—On 2nd July, when the Rev. F. M. B. Carr and I were searching for varieties of *Plebejus argus* L. on the Purbeck coast, I had the good fortune to take a female *Everes argiades*. It has a chip out of the left hindwing, but apart from that, it is in good condition and somewhat larger than the figures in 'South' and 'Frohawk'. An interesting point about this capture is that it was made only about a dozen miles in a direct line from the locality where the original "Bloxworth Blues" were taken in 1885.—H. SYMES, 52 Lowther Road, Bournemouth. 4.viii.52.

LEUCANIA LOREYI DUPONCHEL IN IRELAND.—In the Donovan collection, recently acquired by the British Museum, there is a specimen of *Leucania loreyi* labelled Ummera, Co. Cork, 9.xii.1945, Donovan. It is worn and the right hindwing is split. This is the second Irish example to be recorded. The first was taken at ivy bloom, 6.x.1910 near Queens-town, Co. Cork, by Captain Rupert Gwatkin-Williams, R.N., and recorded by Gervase F. Mathew (*Entomologist*, 1910, 43: 351). Austin Richardson (*Entomologist*, 1946, 79: 19) records the capture of four *Leucania loreyi* in Cornwall in September 1945. This Irish *loreyi* taken in the same year shows that there must have been a migration on a large scale in 1945. The absence of visitors and the scarcity of resident collectors accounts for the paucity of records of Irish migrants in the late autumn. It will be remembered that the great migration of

Leucania unipuncta Haworth in 1929 was only known through the capture of 52 specimens at Ummera by Mrs. Lucas, Miss B. Donovan's twin sister.—E. A. COCKAYNE, 8 High Street, Tring.

DISCLOSURES MADE BY THE M.V. LAMP.—Most entomologists who have used a mercury vapour lamp can match Mr. Minnion's experiences recorded in the June issue (64: 182). The following instances of insects supposed to be rare and being in fact proved to be common are of interest.

Xylomiges conspicillaris. During the two previous early summers I have looked for this insect on fences or orchard tree trunks but have never seen one in this district. This year I used a m.v. trap in my garden for the first time. In the second fortnight of April *conspicillaris* was consistently the second commonest insect in the trap; only *Taenio-campa gothica* was in greater numbers. They were all ab. *melaleuca* View.

Acronicta alni. I have from time to time found a few larvae in the New Forest but never have I obtained this insect at a petrol vapour lamp in spite of having used the lamp in those areas of the Forest where I know the larvae to be found. On May 24th this year, in a wood near Stroud (Glos.), I took ten at a m.v. lamp. Two nights later, at the same place, Mr. Austin Richardson took thirty-two.

Crymodes exulis var. *assimilis*. I had made several expeditions to the Highlands after this insect with meagre results. An occasional one at a petrol vapour light, an occasional one at sugar, pointed to some scarcity even in its correct habitat. On August 1st, 1950, I used a m.v. lamp for the first time on the moors of Inverness-shire. This and the two following nights were windy and as a result I did not use a sheet, boxing the moths out of the heather among which they fluttered. The flight is a short one, 11.0 to 11.20, and in that time I could not cope with all the *assimilis* that arrived. I boxed about 100 in the three nights and probably an equal number came to the light and were blown away again in the strong wind. This particular moor has no merit over hundreds of square miles of similar high peaty country except for a motor road which crosses it, and I have no doubt that over all of it *assimilis* is not scarce but abundant.

Pachnobia leucographa. Here the boot is on the other foot. I normally collect with a m.v. lamp on a tripod over a sheet with a petrol vapour lamp on the sheet below. *Leucographa* is fairly common in the Forest of Dean but none came to the m.v. light. On turning off the m.v. but leaving the petrol vapour lamp burning, *leucographa* at once started to appear.

Surely the explanation is that in areas where they exist, most of the so-called scarce moths are generally common but until the advent of the m.v. lamp no method was available for their capture. These are the insects that come freely to m.v. lamps but succeed in avoiding approaching less brilliant lights and so are seldom seen. Other moths come freely to any sort of light and have consequently always been considered common but are in fact no commoner than the so-called scarce moths mentioned above. Yet another group settle down to rest on the perimeter of the brightly illuminated area, which with a petrol lamp is close to the collector and they consequently attract his attention but with a m.v. lamp may be 50 yards away and they so escape detection. If all

collectors work with m.v. lamps and ignore the use of petrol vapour lamps, these species will soon become the rarities of the next generation of entomologists!—R. P. DEMUTH, Hardwicke, Gloucester. 7.vii.52.

DISCLOSURES MADE BY THE M.V. LAMP.—I have read with interest Mr. Minnion's remarks (*Ent. Rec.*, 64: 182) regarding the attractive properties of m.v. light on hitherto uncommon species. I, also, have been impressed by the large numbers of *Drymonia ruficornis* and *D. trimacula* which have turned up at my portable m.v. set this year in several different localities in this neighbourhood. As I had only once before taken *ruficornis* and had never even seen *trimacula* they were very welcome additions. Among the *ruficornis* one very fine aberration came to my light while collecting with Mr. J. Knight at Ross-on-Wye at Easter. The central portion of the forewings is entirely devoid of the usual cross shades and the crescent shows up like a moon in a cloudless sky!* By way of contrast another variety which has also come my way this year is a specimen with the crescent entirely missing.

Amongst the many 'good things' that have been attracted to my lamp recently I cannot refrain from mentioning *Stauropus fagi* which since the 10th of last month (June) has unfailingly turned up every time I have gone out collecting. As with the *Drymonias*, however, only the males visit me. The females are conspicuous by their absence—and yet I am no misogynist!—F. J. STONE, 79 Reedley Road, Westbury-on-Trym, Bristol. 5.vii.52.

[*A photograph of this fine aberration which our correspondent kindly sends shows it to be ab. *albesignata* Lenz. The use of the mercury vapour lamp has brought about the second revolution in collecting, the first being the discovery of sugaring by Doubleday.—Ed.]

THE CHROMOSOME NUMBER OF *LEUCANIA FAVICOLOR* BARRETT AND *L. PALLENS* LINN.—Dr. Cockayne's Note on the chromosome number in *L. favicolor* and *L. pallens* (*Ent. Rec.*, 64: 220) prompts me to send the following remarks on the two species, which I have had under observation for some years.

When I first took *favicolor* the usual place was a dry sea bank or sandhill and so very few were captured. But in June 1949 a Hampshire salting was visited and *favicolor* found to be quite common. This salting is intersected by numerous deep creeks and is none too pleasant a place to work after dark. Whether it is under water at abnormally high tides has not yet been ascertained. The vegetation is mainly short grasses including patches of *Spartina*, *Statice*s and *Armeria maritima*. The ground is muddy and rarely dries out.

Of the pairs taken all but one were ♂ *favicolor* × ♀ *favicolor*, the odd one being ♂ *pallens* × ♀ *favicolor*.

I was unable to visit the ground in 1950, and on the 23rd June 1951 I could find only one *favicolor*, it being a very wild night when entomological work was almost impossible. I found the sea wall broken and much of the area flooded. On the 28th June 1951 on the same ground I found *favicolor* only and two days later male *favicolor* flying and three pairs of *favicolor* and one female on grass stems. The species was still on the wing on 21st July 1951, but males only and worn.

I intended searching the spot for wild larvae this year but was unable to do so until the 17th May, which date I thought would be too

late. I obtained only five larvae, one of which I sent to Dr. Cockayne who informed me that he thought it was *pallens*. (He subsequently proved to be right as he bred a *pallens*). Of the remaining four larvae one produced a *pallens* and the other three *favicolor*. Dr. Cockayne also informs me that he cannot with certainty distinguish between the larvae of *pallens* and *favicolor*. It is hoped that a more intensive hunt next year will produce greater numbers of larvae.

As regards there being two species I have always been in doubt. There are undoubtedly two forms and the fact that *favicolor* is not found away from the sea but *pallens* is certainly suggests two species. Cross pairings, it should be noted, are very rare. I think *favicolor* could at least be raised to sub-specific rank. I have no accurate record of the relative numbers of the two species on the marsh mentioned but think it to be in the region of 5 or 6 *favicolor* to 1 *pallens*. My notes on the dissections of the two species were destroyed during the last war but I could find no distinct differences except that, speaking from memory, the cornuti were more numerous in *favicolor* than in *pallens*.

There is one other point of interest. *L. favicolor* flies immediately after dark and pairs are not usually taken until about an hour after. Flight normally continues until 1 a.m. B.s.t. and possibly after, but I did not stay later. This year, on the 29th June, not one moth was seen after 11.45 p.m. B.s.t. in spite of a very warm night. If any entomologist is interested in the further investigation of this species I shall be glad to show him the ground. There must be many similar areas in the immediate neighbourhood.—A. H. SPERRING, Slindon, Fifth Avenue, Warblington, Hants. 4.viii.52.

VARIATIONS IN THE LIFE CYCLE OF *LASIOCAMPA QUERCUS* L. VAR. *CALLUNAE* PALMER.—The normal life cycle of *Lasiocampa quercus* L. in the South of England is twelve months and that of var. *callunae* in Scotland and the North of two years. The "Northern Eggar" is also found in North Devon, and in an article in the *Record* for November 1951 (63: 234-5) Dr. Barton White ended an account of his experiences with this variety with the words "The larval and pupal periods have not so far been investigated".

On 3rd July 1949 I picked up a very dilapidated *callunae* ♀ at Aviemore. Two days earlier I had taken a male in fresh condition. I should think this is rather a late date for this insect. The wings of the female were torn to shreds and the state of its body showed that it had laid most of its eggs, but before dying of old age it obliged me with a batch of sixteen. One might have expected that the larvae resulting from these eggs would have lacked vigour, but such was far from being the case. The eggs hatched on 25th July and the larvae went ahead steadily until the time for hibernation. They started feeding again towards the end of February 1950 and grew rapidly: a few died, but ten pupated at the beginning of June. The first moth, a male, emerged on 25th June: no more appeared until 15th July, but on the 16th a male and a female emerged and paired up. Eggs were laid during the next two days, and four more moths emerged by 22nd July, making eight in all, of which six were males. I kept the remaining two cocoons in case the pupae might go over for a second year, but on opening them twelve months later I found one dead female moth and

one dried up larva. Thus the first generation of these *callunae* brought down to the South of England all adopted a twelve months' life cycle.

The eggs of the second generation hatched on 9th August 1950. I kept thirty larvae, which duly went into hibernation and survived the winter without loss, but after they had resumed feeding there were a good many deaths towards the end of March. The survivors fed up rapidly in April and changed into their last skin early in May, but after that things did not go so well. Some died off and others fed very slowly. One formed a cocoon by the end of May, but others lingered on until the middle of July, and in the end only eight cocoons were formed. From the first, a fine male emerged on 30th July. No more moths appeared in 1951, but in June 1952 four moths emerged, two of each sex, having reverted to the normal two-year life cycle of var. *callunae*.—H. SYMES, 52 Lowther Road, Bournemouth. 4.viii.52.

CORRECTIONS IN ALLAN'S LARVAL FOODPLANTS.—Referring to your corrections in *Ent. Rec.*, 64: 223, of some of the printing errors in *Larval Foodplants*, we use *Chaonia* for *ruficornis* Hufn. as Mr. Tams says the genitalia differ from *Drymonia*. *Colostygia* Hübn. is the original spelling and is correct as printed on page 92. *Calostigia* Hübn. was used later. On page 82 *Schranckia* (twice) should be *Schrankia*.—H. M. EDELSTEN, British Museum (Natural History), London. 7.viii.52.

[Oh these names! My amendments of *Chaonia* and *Colostygia* were given with the intention of bringing the names in my little book into line with those in the work of Messrs. Kloet and Hincks, *A Check List of British Insects*, 1945, a work which seems to be regarded by most lepidopterists as the "standard" one on nomenclature. But I am none the less grateful to Mr. Edelsten, as well as for his correction of *Schrankia*, which I had overlooked.—P. B. M. ALLAN.]

CARTEROCEPHALUS PALAEMON PALL. IN HAMPSHIRE.—The entry (or rather entries, for there are two of them) in *The Entomologist's Weekly Intelligencer* (vol. 2, p. 117) referred to in my Note on page 216 of the last issue reads as follows:—"Captures at Lyndhurst.—As we have now been here some time, and as it is probable that some other entomologists may pay a visit to this locality, we have thought it worth our while to send you a list of our captures:—June 26. Went to a heath on the south side of the road between Lyndhurst and the railway station, where we took *Aporia Crataegi*, *Argynnis Paphia*, *A. Adippe* and *P. Sylvanus* in abundance, and a few *S. Paniscus*. June 27. Went again to the same place, where we caught *A. Crataegi*, though not quite so plentifully as on the preceding day; also *A. Paphia*, *Adippe* and *Selene* abundantly, and one solitary *Arge Galathea*. July 1. No more *Crataegi* to be seen; but, on crossing to a wood on the north side of the road, we took about twenty specimens of *Limenitis Sibilla*, which was literally swarming, and about a dozen *Hipparchia Hyperanthus*, together with more *Paphia*, *Adippe*, *Selene*, and an innumerable quantity of Skippers.—ROBERT and ALEXANDER S. HARVEY, 4 Sussex Place, Southampton; July 4."

"*Steropes Paniscus*.—I have great pleasure in announcing that this year I have taken this rare insect at Netley Abbey, in this neighbourhood, where I have also taken one *A. Crataegi* and (last year) *Thecla Betulae*.—ROBERT HARVEY, 4 Sussex Place, Southampton. July 4."

These entries appear to indicate that *C. palaemon* did actually occur, as late as 1857, on the heath on the south side of the road between Lyndhurst and Lyndhurst Road station and that it was taken outside the Forest at Netley Abbey. But in the course of many years' reading of English entomological literature I have come across so many cases of mistaken identity, and unfortunately not a few instances of purposive incorrect attribution for the sake of gain, that a doubt still lingers in my mind. June 26th is a very late date for *C. palaemon*—it is usually 'over' by mid-June. A further note by Robert Harvey in the same volume of the *Intelligencer*, in which he offers to exchange certain duplicates and asks for "*E. cassiope*, *C. porcellus*, *M. stellatarum* or *E. versicolora*," indicates that he "swopped" specimens with other collectors.

We have Mr. Hawker's testimony that there were specimens of *C. palaemon* in the collection of Mr. E. F. Johns of Winton House, Winchester, and that these specimens were alleged to have been caught "near Lyndhurst." But unfortunately we do not know whether they were actually netted by Mr. Johns himself or whether they had been acquired from the Harvey brothers some years previously. Mr. E. F. Johns was a Fellow of the Linnean Society and a note by him recording the capture of *Hyloicus pinastri* L. at Winchester in 1902 will be found in vol. 14, p. 248, of the *Record* (also *Entomologist*, 35: 219).

Pending further information I suggest that judgment on these Hampshire *palaemon* be deferred.—P. B. M. ALLAN.

BLOCKS VERSUS BOARDS.—I started setting, in the 1919-1921 period, in the belief that blocks were best and boards the instruments of the ignorant; but I have now for many years practised both religions simultaneously. I agree with "An Old Moth-Hunter" that blocks have much advantage of speed and handiness, provided that one is dealing with small numbers of insects of differing spans and body-widths; and consequently most of the daily selections from my garden light-trap and breeding cages go that way. But I have found that blocks are definitely slower than boards when one has to deal with long series of insects of similar size and type, and are also less conducive to uniform setting. Further, since each insect must usually have a block to itself, they take up more room on blocks than on boards and so aggravate the storage problem in one's drying houses at the height of the season. But the worst weakness is that I have never been able to devise a safe way of transporting blocks with set insects on them. The vital centre pin lacks the protection of the "hedge-hog" of side pins, which it has on a setting board, and blocks are also liable to come loose however carefully they are packed. So, when I am travelling, I always use boards, secured in cardboard boxes which are less heavy and bulky than the orthodox setting-house. But I am sure that a judicious use of both methods has advantages over a strict adherence to either one alone.

I should perhaps add that I paper my blocks, to give a smoother surface than planed wood; and I generally wind all but the inmost strands of silk over strips of cellophane. This reduces the risk of marking the wings and also prevents the curling of the wing-tips which may occur if the wings are held flat only by the strands. If the initial notches in the block are cut with a fine knife or razor blade, they will hold the

silk firmly without any need for knotting the end, which is a further saving of time. When the time comes to remove the insect from the block, there is of course no need to unwind the strands: they can be simply cut by drawing a sharp blade across the back of the block.—R. F. BRETHERTON, Ottershaw Cottage, Ottershaw, Surrey. 11.viii.52.

A NOTE ON "BUTTERFLIES IN THE COASTAL REGION OF NORTH WALES."

—I am extremely sorry if I have hurt Mr. Gordon Smith's feelings, both from the point of view of seniority and from personal regard, the more so as I felt that I had dealt kindly with his book. Moreover, I should not wish to waste space in the *Record* with personal affairs were it not for two points in Mr. Smith's note (*Ent. Rec.*, 64: 221) which give quite an incorrect impression of what actually occurred.

Firstly, when Mr. Smith wrote to me on the subject I offered to give him any assistance in my power and he asked me for details about the subspecies on the Great Orme to which he refers in his note. I made it quite clear that any information which I could give him, on any point, was always at his disposal.

Secondly, I must protest at his reference to giving my name as the authority for *caernensis* and *thyone*. Mr. Smith had apparently not heard of these subspecies at this time and, in pointing out to him that I had described them, I merely wished to guard against the publication of further synonyms.

Finally, may I say that Mr. Smith's own words (*Ent. Rec.*, 64: 222) "... it is not intended to do more than touch on the ecological aspect, neither are zoogeographical zones to be considered " show that the results of my own work would hardly have been the type for the kind of book he was producing. I am reminded of the worthy Doctor who, when compiling a list of Lepidoptera of one of our home counties, waited a considerable time for a Comma to fly over a hedge so that he might include it as a "county record."

I trust that this clarification of the facts will obtain for me Mr. Smith's forgiveness. My offer of any help I can give is still, as always, open to him.—J. ANTONY THOMPSON, Milton Lodge School, Wells, Somerset. 4.viii.52.

WHAT WERE THEY?—With regard to the query in respect of Parkyns' "exceedingly beautiful insect" (*Ent. Rec.*, 64: 197) might I suggest that these were possibly Trombiculid mites? Everything in the quotation points to this solution, except perhaps the reference to caterpillars. To the eyes of an entomologist it might perhaps seem far-fetched to describe a Trombiculid as "something like a caterpillar" but they are certainly "shorter and thicker, and covered with a fur-like velvet of the brightest scarlet." To those familiar with the ordinary European 'harvest-mites' and their slightly larger adult stages, size alone might be expected to rule them out; but some of the East African species are very large and may be a quarter of an inch in length, exclusive of legs. They are also sometimes very numerous, although in the parts of Ethiopia with which I am familiar (the semi-desert Ogaden) I do not remember observing any very large or very numerous species. Parkyns' part of Ethiopia, however, is as different as chalk from cheese from the Ogaden. I assume that Parkyns, by

"something like a caterpillar," merely means that they were wingless "insects."—D. K. McE. KEVAN, University of Nottingham. 4.viii.52.

Will Subscribers please note the NEW ADDRESS of our Treasurer, MR. A. C. R. REDGRAVE? It is now "Hartsdown, Glenfield Avenue, Bitterne, Southampton".

The Annual Exhibition of the Amateur Entomologists' Society will be held on Saturday, 27th September, at Buckingham Gate Central Schools, Wilfred Street, Westminster, from 2 p.m. to 5.30 p.m. Admission will be free. The Hall will be open from 10 a.m. for the receipt of Members' exhibits. During the afternoon there will be talks by Dr. C. B. WILLIAMS on "Insect Migration," by Mr. W. H. T. TAMS on "Uses and Abuses of Entomological Names and Terms," and by Mr. E. E. SYMS on "Burying Beetles." Offers of help and enquiries should be sent to Mr. K. H. BOBE, 19 Hengist Road, London S.E.12.

Collecting Notes

ODONTOSIA CARMELITA ESP. IN SCOTLAND.—This fine species is well known to occur in the birch woodlands of the Highlands, so when I came to live on Speyside in Inverness-shire last November I hoped to make the acquaintance of it this spring. I was, however, delighted to find the 'Scarce Prominent' having a good year in 1952, almost belying its name. Between 21st April, when the first male visited the m.v. trap in my garden, and 13th May no less than 49 individuals were counted, a fine series being selected. Most of them occurred on two consecutive warm nights, the 5th and 6th May, in a certain wood when 14 came to a portable m.v. lamp and sheet the first night and 15 on the second. The remainder were single specimens at the trap in my garden or found sitting by day on fences.—Commander G. W. HARPER, R.N., Nedaich, Newtonmore, Inverness-shire. 2.viii.52.

HETEROGENA ASELLA SCHIFF. IN KENT.—With reference to the note on this species in *Ent. Rec.*, 64: 218, a further specimen of this insect was taken by me at m.v. light at Ham Street on 27th June this year.—E. H. WILD, 112 Foxearth Road, Selsdon, Surrey. 5.viii.52.

JASPIDIA DECEPTORIA SCOP. IN N.E. SUSSEX.—While collecting with Dr. McNulty on the night of 13th June this year a very fresh ♂ of this species came to the m.v. lamp at 11.30 p.m. (B.s.t.). The specimen is now in Dr. McNulty's collection.—E. H. WILD, 112 Foxearth Road, Selsdon, Surrey. 5.viii.52.

AN OBJECTION TO THE USE OF M.V. LAMPS WITH A SHEET.—Many entomologists have advanced weighty objections to m.v. lamps and to these I can now add one other. This year we have spread the sheet on Chobham Common on a number of occasions with considerable success (*D. oo.*, *M. turca*, *A. scolopacina*, *E. picata*, etc.). On the 26th July, however, the sting (paradoxically) was taken out of collecting by the arrival of a number of hornets between 10 p.m. and midnight. Now, I for one don't mind *T. pronuba* down my neck, but *Vespa crabro* is another matter. There was nothing like that in my young days with

a petrol lamp. The effect of m.v. light on a nest of hornets deprived of their sleep is terrible to contemplate.—E. H. WILD, 112 Foxearth Road, Selsdon, Surrey. 5.viii.52.

COLEOPTERA

HARPALUS ANXIUS DUFTS. (CARABIDAE) IN SOUTH-EAST LONDON.—This species, locally abundant on our south coast sandhills, is recorded from a few places inland where conditions are suitable. Such are the Breck district of East Anglia and the faunistically similar sandy area at Tubney (Berks.) near Oxford; it is common also at Oxshott and probably on other heaths in Surrey. It does not, however, seem to have been noted in West Kent or on the eastern fringes of London, so it may be worth reporting the capture of a single specimen together with other Harpali (*H. aeneus* F., *rubripes* Duft., *attenuatus* Steph., *tardus* Panz. and *rufitarsis* Duft., the last common over a wide area) at roots of herbage on sandy ground at Bostall Heath, Woolwich, 29.iv.52.

Fowler (*Victoria County History of Kent*, 1908, p. 126) records an example of *H. melancholicus* Dej. as taken by himself at Plumstead. In view of the above captures, which suggest that the locality is especially suited to this group of the genus, it is reasonable to suppose that the latter rare species still survives in the district—Woolwich and Plumstead being but a few miles apart.—A. A. ALLEN, The Tiled House, 63 Blackheath Park, S.E.3. 3.vii.52.

DIPTERA

Notes on the Asilidae (Robber Flies)

By L. PARMENTER.

(Continued from page 234.)

PAIRING.

Coupling therefore appears to lack all finesse in most species in the family, unlike the behaviour found with many *Dolichopodidae* and *Empididae*. Like the plebian Bluebottles, the male grabs the female and fertilisation takes place.

The males of each species have strong claspers, and the anus of both male and female is kept free, permitting easy coition without loss of sperma. In most cases, males alight on the thorax of the females. Some remain in this position when linked, but after the union, in the majority of species, the male turns and faces the opposite direction so that the pair form a more or less straight line. They will fly whilst so coupled, with both individuals using their wings as if in a tug of war. The female, almost invariably the larger of the two, decides the direction of flight. In the larger species such as *Asilus*, *Laphria*, etc., this joint flight is made with a pronounced buzzing easily distinguished from the normal flight buzz of the species concerned.

Leptogaster cylindrica males are smaller than the females and it is possible at times to find a pair coupled with the male merely hanging from the abdomen of the female without further support from grass stem, etc.

Dioctria and *Laphria* species, when coupled, face opposite directions and I have seen the pairs fly, still joined in this fashion.

In *Asilus*, however, the male remains on the female's thorax unless disturbed by flight, when he trails along, remaining joined throughout the flight, and climbs back again on alighting. *Dysmachus*, *Epitriptus* and *Machimus* act similarly.

With *Neoitamus cyanurus*, the male remains on the female's thorax, but she will tilt her abdomen upwards permitting the male to climb high on to the thorax, often resting his fore legs on her eyes.

Coition will last many minutes—at least 15 minutes. In fact personally I have never seen a paired couple separate except on being disturbed.

There are a few records of the females of coupled flies sucking insects during the act of coition. There are also several records of Asilids killing their own kind. I have not been able to find, however, any record of a female killing a male after copulation. In this matter, their habits seem a little more civilised than those of Spiders.

The recognition of a female by a male is a problem worth attention. The speed of the coupling makes observation difficult. An American theory has been put forward that the recognition is by a scent which may be restricted to the breeding season of the individual concerned. This theory is upheld by Melin.

As mating takes place in most cases soon after emergence and prior to feeding, it must be controlled by a powerful instinct. It is dangerous to compare insect responses with those of other animals, but one remembers that scent evokes instant responses in the young of mammals. The assembling of moths also lends support to the hypothesis. In Muscidae some species have been found with no less than 3,500 sense organs on the antennae. The bot flies have over 6,000 each. Correlation has been proved between the number and the olfactory requirements of the insects in feeding.

GENERAL BEHAVIOUR.

The Asilidae are, generally speaking, strong flyers. *Leptogaster* is the weakest of the British genera. Although examples of the family have not been taken in the traps suspended from kites and high aerial towers, suggesting that they do not rise very much from the ground, I have found *Isopogon brevirostris*, in a stiff wind, some distance from hills from which it was likely to have been blown. In the smaller species the flight, to our ears at least, is silent; but the larger species, especially *Asilus crabroniformis*, have a distinct buzz. The sound changes when a capture is made whether in coupling or in the capture of prey.

Like dragonflies they are sunlovers. They creep out of sight in dull and windy weather. In the sunshine species like *Machimus* love to lie on one side as if to toast one side of the body at a time. Whether this is an attitude adopted for basking I cannot say, but it may be that such an attitude enables concentration to be made on a possible victim flying by. With one eye turned to the leaf or tree trunk the other would be free to watch for any passing object.

ENEMIES.

Red mites are sometimes seen on species of *Dioctria* but not often on other species. Probably the abundant bristles enable the Asilidae to keep themselves comparatively clean.

Spiders and dragonflies are their known enemies and birds probably also capture them. Unfortunately, so few people record their observations of feeding habits. Single observations may seem unimportant but collected together enable us to appreciate the inter-relations within an animal community and to examine the mimicry theories so assiduously studied at Oxford University. All who study animals in the field should pass on all information regarding insects as food of insects and other animals. The Russians and Dutch have special traps for collecting food taken by Starlings and Great Tits for their young. I see no reason why a few of our enterprising dipterists should not follow their lead and study this aspect in this country. The birds will feed on different insects in varied habitats so that as wide a range as possible in the distribution of observers is needed.

FEEDING.

The chief interest of the Asilidae, it will probably be agreed, is in their especial habit of feeding on other insects. The majority of species capture their prey by making a dart at a flying insect. The weaker species such as *Leptogaster cylindrica* will take inactive creatures, even small spiders, possibly as they dangle from their threads.

Leptogaster and *Dioctria* fly along when hunting, with their hind-legs trailing downwards, forelegs drawn forward ready to grab the insect flying in front.

Machimus, *Laphria*, etc., dart from their observation post on a leaf, fence, tree trunk, stone, etc. The prey is taken in flight and unless the prey was just about to alight the captor generally returns with the booty to its original vantage point. The position adopted for the watching and eating is, as far as I have noticed, always in the sunshine.

POISONING.

Death of the victim is usually immediate or very rapid. This suggests that a poison is used. As no fly possesses a stinging apparatus in its tail it is obvious that the mouth parts must be the instrument. The lancet used for killing is the hypopharynx. The poison flows through the keel of the hypopharynx and kills the prey very quickly, leaving it relaxed. The powerful salivary juices flow along the bed of the labium and may even act as a lubricant for the action of the hypopharynx.

The effect of the poison seems to be lessened in cold and rainy weather according to Melin, which suggests that in Sweden Asilids are about in worse weather than here. I have never watched these flies in such weather myself, except to see them hide away. We know, however, that with a drop in temperature, the metabolism of Diptera slows down considerably. Possibly the action of the poison is delayed by a notable reduction in the speed taking it through the body of the prey besides any chemical action delayed or altered by a fall in body heat. That it is a poison that is used was shown by Le Conte in 1849. This American experimented by piercing various insects with pins, and failed in every attempt to secure speedy death or a relaxed condition, despite great care in selection of the nerve ganglia and other vital parts:

The *Asilidae* are deft killers, catching their prey with their fore legs. The victim is carried to some perch and the proboscis pressed to the back of the prey, generally the back of the head or dorsum. The

hypopharynx is extruded and the prey dies quickly and seemingly painlessly. Remembering Fabre's experiment with the scorpion, it might be worth while trying a similar experiment with a solution of various parts of *Asilidae*. Fabre found that a solution of any part of the scorpion proved fatal and death was not due to a special poison secreted by a particular sac or gland. In the case of the *Asilidae* we know that labial glands are present, but no one as far as I know has examined the action of the secretion, except by inference from the results of the action of the hypopharynx.

The probosces of the various species vary in length, size, and shapes of the parts. Of the species found in Britain, *Leptogaster* has the weakest and *Asilus crabroniformis* the strongest proboscis. The barbs on the hypopharynx of *Leptogaster* are long and few, whilst on the hypopharynx of *Asilus*, which is actually and proportionately longer, the barbs are short and numerous, stretching for a long distance backwards from near the tip. Another case of adaptation.

The saliva dissolves the interior of the prey and the solution is pumped into the Asilid's oesophagus by a simple pump action. The enlarged funnel at the root of the proboscis is opened by retracting muscles drawing in the solution. A sac further along the alimentary canal is opened and the entrant funnel is squeezed, forcing the food or should we say drink along the tube. With the funnel closed, the sac is next squeezed and away goes the fluid along the alimentary canal.

(To be continued.)

Fifty Years Ago

(From *The Entomologist's Record* of 1902)

PARTIAL SECOND BROOD OF *DICRANURA FURCULA* IN BRITAIN.—Last June I found a larva of *Dicranura furcula* on a willow growing in one of our hedges. About the second week of July it formed a cocoon, which seems to me to be constructed in an unusual position, and is made so as to resemble a willow gall. From it a male emerged yesterday evening, August 14th. I think this is worth noting, as I see in *The Lepidoptera of the British Islands* that Mr. Barrett mentions that a solitary instance of a second emergence in the year, in this country, was observed by the Hon. F. Thellusson, in 1893.—J. F. BIRD.

SWARMING OF *HEPIALUS LUPULINUS*.—On the evening of July 11th, in my garden at Hale End, Walthamstow, I noticed a number of *Hepialus lupulinus* flying round a vegetable-marrow plant. They were all males, and evidently assembling, but on a careful search for the ♀ I failed to discover her. Their attention was chiefly devoted to the top-most leaf, which had been caught by the frost two nights before, and was discoloured and drooping, though the stalk was rigid. There must have been 30 or 40 *H. lupulinus* flying round and swarming over this leaf, in a very excited state, with upward-curved abdomina. I cut off the leaf and examined it. It had a faint hay-like odour, and there was nothing to be seen on it. I stuck it in the ground some distance away from the marrow plant, and the *H. lupulinus* at once swarmed round it again, having left the plant, and I boxed eleven of them at three attempts. Towards the end of the time of flight I moved it again

to the other end of the garden. There were no *H. lupulinus* in sight here, but in two minutes there were a dozen or more round the leaf. This case seems to show plainly that, with these species at any rate, the attraction is exercised through the sense of smell, and not by any mysterious '6th sense' unknown to man.—R. W. ROBBINS.

Current Literature

DIE SCHMETTERLINGE MITTELEUROPAS by Dr. W. Forster and Prof. Dr. Th. A. Wohlfahrt. Franckh'sche Verlagshandlung Stuttgart.—The author says in the preface that there has been no book on the Lepidoptera of Middle Europe published during the last forty years and that many discoveries and changes in nomenclature are incorporated in the new work. It will be issued in five volumes dealing with all middle European species and including a short account of the egg, larva, and pupa, and will be illustrated by coloured plates.

Vol. 1 will deal with development, ecology, parasites and diseases, genetics, systematics and nomenclature, and geographical range (256 pp.). Vol. 2. Butterflies (128 pp., 27 pl.). Vols 1 and 2 will be completed in 1952 and 1953 at a cost of DM. 76. Vol. 3. Hawkmoths and Bombyces in the wide sense (260 pp. 30 pl.) will be completed in 1954. Vol. 4. *Noctuidae* (400 pp. 30 pl.) will be completed in 1956. Vol. 5. *Geometridae* (320 pp., 30 pl.) will be completed in 1958.

We have received for review parts of vol. 1 and 2. One section is devoted to methods of collecting and apparatus, most of it quite orthodox. The value of U-V light is recognized, but there is no description of a modern light trap. For beating larvae a modified umbrella is recommended, and it is remarkable that this antiquated implement has not been superseded by the convenient and efficient Bignell's beating tray.

Vol. 2 begins with *Papilionidae* followed by the *Pieridae* and *Satyridae*, and text figures of the neurulation of each genus are given. The scope of the work is much more limited than that of Spuler and Berge and it will be correspondingly less useful to lepidopterists in this country, though there is no doubt that it will be of value to those interested in the palaearctic fauna. Only those species and subspecies found in central Europe are mentioned and only one or two aberrations such as *Colias croceus* ab. *helice* Hübner. It is a pity there is no map showing the limits of the area included by the authors under Mitteleuropas. *Papilio machaon* ssp. *bigenaratus* is still called *gorganus* and the new *Colias* is called *australis* Verity instead of *calida*. *Pieris bryoniae* O. is regarded as a species distinct from *napi*, which is the view of many lepidopterists, but by no means all. It will be interesting to see what generic names the authors use for the fritillaries.

The coloured plates are adequate, but do not reach the high standard claimed by the authors. The real test of their value will come when the volume on the *Noctuidae* is published.

GENETICS, PALEONTOLOGY, AND EVOLUTION. Princeton, N.J. 1949. Edited by G. L. Jepsen, Ernst Mayr, and G. G. Simpson.—In this book, which is not accessible to many of our readers, there are two notes by E. B. Ford on pages 310, 311.

1. *Ectropis crepuscularia* Hübner ab. *nigra* Thierry-Mieg. E. B. Ford bred from a Berkshire female 73 F1 and 164 F2 specimens and found that ab. *nigra* behaved as a complete recessive to normal *crepuscularia*. When he crossed ab. *nigra* with a normal Irish *crepuscularia* the F1 generation was darker than either normal Berkshire or Irish *crepuscularia* and the F2 generation varied from moths indistinguishable from normal homozygous *crepuscularia* to darker ones, some nearly as dark as *nigra*, but easily separable from that form. Ford accepts Donovan's statement that *bistortata* does not occur in Ireland, but Huggins and I have seen this species from southern Ireland, and one wonders whether Ford's intermediate specimens were hybrids.

2. *Coenonympha tullia* Muller. E. B. Ford crossed males from Merioneth with females from Scotland and obtained three broods; the first consisted of 25 normal males, 15 normal females and 4 female intersexes, the second 8 normal males, 9 normal females and 1 female intersex, and the third 12 normal males and 7 normal females. In all there were 45 males, 31 females and 5 female intersexes. The intersexes had patches of the darker coloration of the male on the pale wings of the female, the prothoracic legs were intermediate in structure between those of normal males and females, and the internal and external genitalia were imperfectly developed, but female in character. Only one successful pairing was obtained between a Scottish male and a Merioneth female, but the larvae were not reared. This shows that *tullia* from the opposite ends of a long cline differ in sex valency, and the intersexes are comparable with some of those obtained by Goldschmidt by crossing different races of *Lymantria dispar*.

CADDIS, by Norman E. Hickin. (No. 5 of the Field Study Books, edited by Dr. E. A. R. Ennion.) $8\frac{1}{4} \times 6\frac{1}{2}$ ins. 4 Plates in colour, 47 Figures in the text; pp. x + 50. Methuen, 1952. Price, 9s 6d.

In writing this most readable account of the Trichoptera, profusely illustrated with excellent drawings from his scientific papers, the Author has successfully fulfilled the purpose of the Field Study Books—the bridging of the gap between the textbook and the superficial account.

Chapters are devoted to the larval, pupal and imaginal stages (with a note on the single parasitic Hymenopteron), also one on collecting, rearing and preservation. The final chapter is a short guide to further research on the biology of Caddis—"only some thirty-five immature stages of the (189) British species have so far been described . . ."

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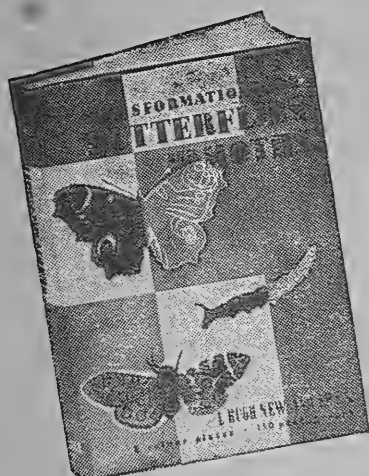
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NOTES, CURRENT LITERATURE, ETC.

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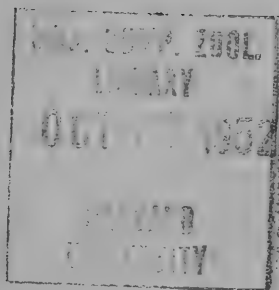
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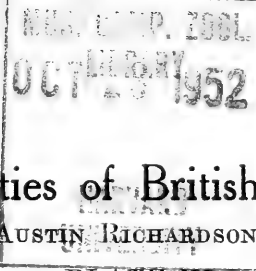


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New Varieties of British Lepidoptera

By AUSTIN RICHARDSON, M.A.

PLATE XI.

On the advice of Dr. Cockayne I venture with some diffidence to list and name some new varieties. With two exceptions, as specified, the types are all in my collection.

Boarmia roboraria Schiffermuller ab. **illustris** ab. nov. (Fig. 1).

All markings strongly pronounced. Hindwings strikingly banded by a broadening of the antemedian and postmedian lines.

Type ♂ : Newent, Glos., 3.vi.46, A.R.

Cleora cinctaria Schiffermuller ssp. **bowesi** ssp. nov. (Figs. 2, 7).

This race has a silvery white ground and blackish grey markings, with the addition of a few brown scales in the male. It differs from the English and Irish forms by the almost complete absence of brown in the ground and markings. The moths sit about on rocks, posts and tree-trunks on Scottish moorlands and were discovered in Perthshire in April 1938 by the late Pilot Officer A. J. L. Bowes and J. O. T. Howard, though Barrett mentions as doubtful an old record from Dalmally, Argyllshire. It has since been found in Inverness-shire.

Type ♂ : Struan, Perthshire, 20.iv.43, A.R.

Allotype ♀ : Struan, Perthshire, 20.iv.45, A.R.

Paratype ♂ ♀ : Struan, Perthshire, iv.46, E. A. Cockayne. Cockayne coll.

Cleora cinctaria Schiffermuller ab. **berylaria** ab. nov. (Fig. 3).

Ground colour uniform pinkish-grey. Two cross lines and subterminal blotches clearly defined but reduced to a minimum, giving a sharply etched effect.

Type ♂ : Struan, Perthshire, 19.iv.46, Mrs. A. Richardson.

Phigalia pedaria Fabricius ab. **fasciaria** ab. nov. (Fig. 6).

The space between the second and third lines on forewings is filled in to form a broad median band.

Type ♂ : Forest of Dean, Glos., 4.ii.39, A.R.

Anaitis plagiata Linnaeus ssp. **scotica** ssp. nov. (Fig. 18).

This Scottish race, widely distributed in the Highlands, differs markedly from southern specimens by its blue-grey colouring. It varies within the usual limits.

Type ♂ : Dalwhinnie, Inverness., viii.46, A.R.

Erannis defoliaria Clerck ab. **praeclara** ab. nov. (Fig. 4).

Ground colour of forewings bright orange-brown. Upper third of dark subterminal band obsolete.

Type ♂ : Stroud dt., Glos., xii.47, A.R.

Eulype subhastata Nolcken ab. **diluta** ab. nov.

Forewings: terminal quarter, thin parallel dark markings along nervures, apical blotch and subapical band lightly defined; basal area

marked by blackish clouding extending outwards along the costal and subcostal veins and the inner margin. Hindwings: parallel dark markings along nervures in terminal third, blackish clouding in basal third. Thinly scaled.

Type ♀: Bred, Dalwhinnie, Inverness., iv.49, A.R. It is figured in *Proc. S. London Ent. and N.H. Soc.*, 1949-50, Pl. iii, fig. D.

Semiothisa liturata Clerck ab. **unicolorata** ab. nov. (Fig. 15).

Orange markings completely absent, replaced by normal ground colour. Subapical blotch strongly defined.

Type ♂: Newent, Glos., 1.vii.46, A.R.

EXPLANATION OF PLATE XI.

- Fig. 1. *Boarmia roboraria* ab. *illustris*. ♂. Type.
 Fig. 2. *Cleora cinctaria* ssp. *bowesi*. ♂. Type.
 Fig. 3. *Cleora cinctaria* ab. *berylaria*. ♂. Type.
 Fig. 4. *Erannis defoliaria* ab. *praeclara*. ♂. Type.
 Fig. 5. *Ortholitha umbrifera* ab. *costijuncta*. ♀. Type.
 Fig. 6. *Phigalia pedaria* ab. *fasciaria*. ♂. Type.
 Fig. 7. *Cleora cinctaria* ssp. *bowesi*. ♀. Allotype.
 Fig. 8. *Dysstroma citrata* ab. *obsolescens*. ♂. Type.
 Fig. 9. *Gymnoscelis pumilata* ab. *obsolescens*. ♀. Type.
 Fig. 10. *Eupithecia linariata* ab. *praeupta*. ♀. Allotype.
 Fig. 11. *Orthonama lignata* ab. *fasciata*. ♂. Type.
 Fig. 12. *Sarothripus revayana* ab. *aurana*. ♂. Type.
 Fig. 13. *Dianthoecia capsophila* ab. *obsolescens*. ♀. Type.
 Fig. 14. *Hydriomena furcata* ab. *exquisita*. ♀. Type.
 Fig. 15. *Semiothisa liturata* ab. *unicolorata*. ♂. Type.
 Fig. 16. *Chesias rufata* ssp. *scotica*. ♀. Type.
 Fig. 17. *Drepana lacertinaria* ab. *conjuncta*. ♀. Type.
 Fig. 18. *Anaitis plagiata* ssp. *scotica*. ♂. Type.
 Fig. 19. *Hydraecia paludis* ab. *obsoleta*. ♀. Type.
 Fig. 20. *Hydraecia micacea* ab. *aurantia*. ♂. Type.
 Fig. 21. *Orthosia populeti* ab. *plumbea*. ♀. Type.
 Fig. 22. *Amathes alpicola* ab. *suffusa*. ♀. Type.
 Fig. 23. *Euxoa tritici* ab. *fasciata*. ♂. Type.
 Fig. 24. *Achlya flavicornis* ab. *haverkampfi*. ♂.
 Fig. 25. *Bena fagana* ssp. *britannica* ab. *argyrozona*. ♀. Type.
 Fig. 26. *Bena fagana* ssp. *britannica* ab. *bilinea*. ♀. Allotype.

Ortholitha umbrifera Prout ab. **costijuncta** ab. nov. (Fig. 5).

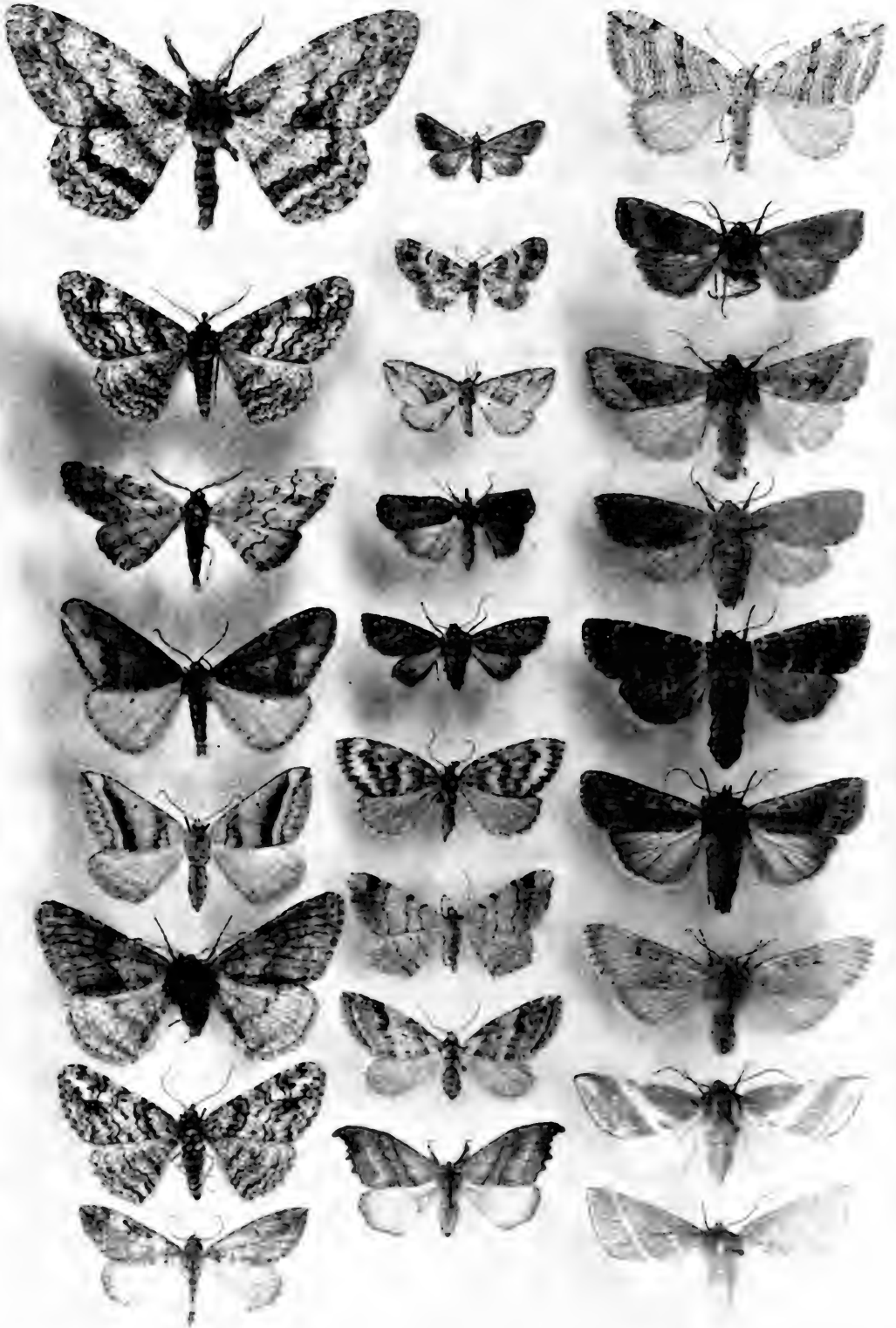
Basal and antemedian lines combining in the costal half of the forewings to form a thick cloudy line in which short pale lines can be seen along the costal nervures: interval almost normal at the inner margin.

Type ♀: Newent, Glos., bred xii.46, A.R.

Hydriomena furcata Thunberg ab. **exquisita** ab. nov. (Fig. 14).

Forewings crossed by four thick light greenish-brown lines situated in terminal, postmedian, submedian and subbasal areas. The two median lines are joined by a short bar at the inner margin but are wide apart at the costa, just before which they are angulated. The space between them is coloured pale greenish-yellow, in which a darker discal mark is visible. The subterminal area and the space between subbasal and submedian lines are greenish-white. The basal area is greenish-yellow, darkened by indistinct basal markings.

Type ♀: Rannoch, Perthshire, 8.viii.38, A.R.



Left: 1 to 8. Middle: 9 to 17. Right: 18 to 26.

Chesias rufata Fabricius ssp. **scotica** ssp. nov. (Fig. 16).

In this Scottish race the ground colour is of a deeper bluish-grey than in the southern form.

Type ♀ : Aviemore, Inverness., bred vi.47, A.R.

Dysstroma citrata Linnaeus ab. **obsolescens** ab. nov. (Fig. 8).

The dark markings in the apical area and the subterminal line of white dots remain but the rest of the forewing is coloured pink, in which can be seen a faint dark subbasal cross line, dark markings along the nervures, black discal marks and a paler patch between discal and apical areas. The left forewing has a black bar .4" long running parallel with the costa above the discal mark.

Type ♂ : Aviemore, Inverness., viii.43, A.R.

Eupithecia linariata Schiffermüller ab. **praerupta** ab. nov. (Fig. 10).

The black central band on forewings is broken up into a short curved bar and two minute dots.

Type ♂ : Boscastle, Cornwall, bred vii.47, A.R.

Allotype ♀ : same data.

Gymnoscelis pumilata Hübner ab. **obsolescens** ab. nov. (Fig. 9).

The basal two-thirds of all four wings almost devoid of markings. Postmedian band and terminal markings strongly pronounced. Ground colour rather darker than normal.

Type ♀ : Stroud dt., Glos., vii.49, A.R.

Orthonama lignata Hübner ab. **fasciata** ab. nov. (Fig. 11).

Antemedian and postmedian lines strongly pronounced, the latter curved inwards as it meets the costa. The intervening area darkened in colour to form a pronounced band across the wing.

Type ♂ : Witherslack, Westmorland, 6.viii.38, A.R.

Bena fagana Fabricius ssp. *britannica* Warren ab. **bilinea** ab. nov. (Fig. 26).

The forewings are crossed by two sharply defined antemedian and postmedian lines only, of which the first does not quite reach the costa. Ground colour smooth green without clouding. It is noteworthy that both type and allotype specimens were taken unusually late in the year.

Type ♂ : Bentley Wood, Suffolk, 14.viii.97, C. R. N. Burrows. (Burrows coll.) B.M., 1949, 586.

Allotype ♀ : Ham Street, Kent, 8.ix.49, A.R.

Bena fagana Fabricius ssp. *britannica* Warren ab. **argyrozona** ab. nov. (Fig. 25).

Forewings crossed by a broad silvery-white band in which traces of green are visible at the upper and lower ends. This band is formed by a fusion of the first and second white cross lines which are otherwise absent. The third line is present and is especially pronounced at its upper end.

Type ♀ : Forest of Dean, Glos., vi.32, A.R.

Dianthoecia capsophila Duponchel ab. **obsolescens** ab. nov. (Fig. 13).

Forewings uniform greyish-black, in which pale reniform and orbicular stigmata and a pale terminal line are faintly visible.

Type ♀ : Kinsale, Cork, bred 18.vi.38, A.R.

Orthosia populeti Fabricius ab. **plumbea** ab. nov. (Fig. 21).

Forewings uniform leaden grey-brown in which the paler orbicular stigma and subterminal lines are barely distinguishable. Usual dots just inside subterminal lines almost invisible. Hindwings pale grey-brown.

Type ♀ : Aviemore, Inverness., 7.iv.36, A.R.

Orthosia incerta Hufnagel ab. **plumbea** ab. nov.

Forewings uniform leaden grey-brown, in which the paler reniform and orbicular stigmata and the subterminal line are barely distinguishable. An extremely faint reddish clouding can also be seen in the median and subterminal areas. Otherwise this specimen closely resembles the preceding one (*O. populeti*) except in shape which is more typical of *O. incerta*.

Type ♂ : Stroud dt., Glos., 21.iii.49, A.R.

Hydraecia paludis Tutt ab. **obsoleta** ab. nov. (Fig. 19).

Forewings of a deep brownish colour as in var. *brunnea* Tutt but the orbicular is absent and the reniform markedly restricted and of the same colour as the rest of the wing.

Type ♀ : Stroud dt., Glos., 27.viii.49, A.R.

Hydraecia micacea Esper ab. **aurantia** ab. nov. (Fig. 20).

Forewings bright orange-red, markings normal.

Type ♂ : Forres, Moray, 19.viii.38, A.R.

Amathes alpicola Zetterstedt ssp. *alpina* Stephens ab. **suffusa** ab. nov. (Fig. 22).

Forewings, hindwings, thorax and abdomen all coloured blackish-brown through which the usual markings are faintly visible on the forewings, especially the pale antemedian and postmedian lines, a row of marginal white dots, and a basal line extending across the costal half of the wing. The dark colour has faded considerably since emergence.

Type ♀ : Aviemore, Inverness., bred vi.46, A.R.

Euzoa tritici Linnaeus ab. **fasciata** ab. nov. (Fig. 23).

Median areas of forewings darkened to form a pronounced band. The darkening is especially noticeable in the very distinct submedian and postmedian lines, in a thick line running below the pale costal streak and containing the reniform and orbicular, and in two short horizontal bars situated below the orbicular, the lower being the clavi-form.

Type ♂ : Stroud dt., Glos., vii.45, A.R.

Drepana lacertinaria Linnaeus ab. **conjuncta** ab. nov. (Fig. 17).

The antemedian and postmedian lines are approximated to form a pronounced band and are joined by a short bar at the costa. Basal area pale.

Type ♀ : Aviemore, Inverness., bred iii.43, A. R.

Sarothrips revayana Scopoli ab. **aurana** ab. nov. (Fig. 12).

Markedly distinguishable from normal ab. *fuscilana* Schmid, which it otherwise resembles, by its very pronounced orange-brown colouring. Only a faint trace of the normal purple remains, in the postdiscal area.

Type ♂: Cirencester, Glos., 4.xii.40, A.R.

Achlya flavicornis Linnaeus ab. *haverkampfi* Lambillion. (Fig. 24).

Dr. Cockayne has suggested that I should include in the plate a specimen of this scarce aberration, in which the transverse lines are obsolete. I took it at light at Newent, Glos., 12.iv.48. There is no representative at Tring but there is a specimen, without data, in the Hope Department at Oxford. A somewhat similar variety, having one subterminal line only, and hindwings white except for a dark terminal band, has been named ab. *unilinea* by S. Gordon Smith and is figured in *Proc. Chester Soc. Nat. Hist. Lit. and Art*, 1947, plate facing p. 71, fig. 2.

New Melanic Aberrations

Epirrhoe alternata Müller ab. *melanotica* Hörhammer. *Ent. Z.*, 1952, **62**, 37. The upper side is altogether black with the exception of a trace of the white ground colour in the median band, which is brownish black. The under side is unicolorous black. The sex and locality are not given. Hörhammer took another specimen, which on the forewing was black except a narrow white stripe on each side of the median band; the outer part of the wing was blue-grey with a white subterminal line; the hindwing was altogether blackish grey with a narrow white median band showing through. In the *Ent. Record*, 1928, **40**, 18, pl. 3, fig. 2, a specimen is described and figured with the wings on the right side completely black and those on the left normal except for a few black flecks near the inner margin of the forewing and numerous black marks all over the white parts of the hindwing. This may be a somatic mosaic with one half and parts of the other ab. *melanotica* Hörhammer.

Eilema depressa Esper (*Lithosia deplana* Esper) ab. *violagrisescens* Daniel. *Nachrichtenblatt Bayerischen Entomologen*, 1952, **1**, 2. The ground colour of the forewing is uniformly blackish grey with a slight violet sheen; the base, costa, and a short streak along the inner third of the subcostal nervure and the fringes are shining dark-brown; the hindwing is dark grey. The under side is like the upper but duller in tone. The head, thorax, and antennae are dark brown, the shoulder straps blackish grey, and the abdomen dark grey. It is very like *Gnophria rubricollis* but lacks the red collar. One male was taken in mixed woodland where normal specimens are common. The area is free from industrial contamination.

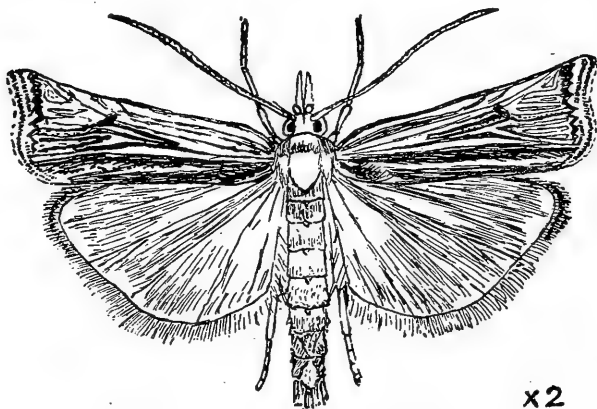
Ancylolomia tentaculella Hübn. in Kent

By Canon T. G. EDWARDS and S. WAKELY.

Among many interesting captures of Lepidoptera made while on a short holiday at Dymchurch, Kent, this summer was a specimen of

the above-named moth. It was taken at light on the 5th of July last, and the species has not been previously recorded for Britain. We were using a Phillips blended lamp bulb suspended over a sheet in the garden, and weather conditions were ideal.

Mr. S. N. A. Jacobs named it from Continental specimens in his fine collection, and the identification was afterwards confirmed by Mr. E. L. Martin at the British Museum.



According to Spuler this is a South European species, and the same authority states that the larva is unknown. However, Mr. Martin was able to find a reference to the larva by L. Lhomme in his *Cat. des Lép. de France et de Belgique*, II, 87 (1935), a translation of which runs as follows:—

“The larva lives in a tunnel about 3 or 4 centimetres long, situated vertically at the base of the stalks of various grasses, chiefly *Dactylis glomerata* L. Sept.-June (P. Chrétien).”

It is quite possible that the Dymchurch specimen emerged locally and that other records may follow.

From the accompanying illustration, kindly drawn by Mr. Jacobs, it will be seen that *A. tentaculella* is a striking insect, with a wing expanse of 31 mm. It is placed at the end of the Crambidae immediately after the genus *Chilo*. For an English name the “Large Grass-veneer” might seem appropriate.

We should like to thank Mr. Jacobs for his excellent illustration and also Mr. Martin for supplying the larval reference.

Lampides boeticus Linn. in Surrey

By L. H. S. CHEVALLIER.

At mid-day on 6th July 1952, in bright sunshine, a female *Lampides boeticus* L. was captured while flying about a clump of Everlasting Pea (*Lathyrus latifolius*) outside the Post Office at Ranmore Common, near Dorking, Surrey. Ranmore Common is 600 feet above sea-level. The insect was worn and discoloured, one wing being badly damaged, and I did not immediately recognise it as a female *L. boeticus*. The sex was established by Mr. Laurence Christie and on 12th July he accompanied me to Dorking to examine the food plant for eggs.

In a two-hour search we found twenty-six, most of which had been deposited on the outside of the calyx, though several were on spray

stems and on the lip of the flower. In practically every case the eggs were on different sprays and those selected bore flowers likely to come into bloom about the time the larvae would be due to emerge.

We removed all sprays on which there were eggs and, as I had to be away from home for the following week, Christie took charge of 21 eggs and I retained 5 only. I left the sprays in my wife's care to be kept in water until I returned.

On 21st July I examined the flower heads, which were then beginning to drop, and found larvae inside the calyces of five of them. I could detect no evidence as to whether entry had been effected by boring through from the outside of the calyx or crawling between the lips of the flower. As nearly all the flowers were dead and I had been unable to locate any Everlasting Pea near home, I had no choice but to experiment with other food plants.

On 22nd July I placed each of the flower heads containing the larvae inside a bladder-senna pod (*Colutea* sp.). The pods were then put in separate boxes with a double layer of nylon covering. After a day or so the larvae crawled into the pods from which they presumably derived some nourishment though the peas inside the pods seemed to be left untouched.

On 23rd July I tried freshly picked sweet pea pods (*Lathyrus odoratus*) broken in half and inserted in the senna pods. They created some interest but progress at this stage was very slow. Runner beans (*Phaseolus multiflorus*) and garden peas (*Pisum sativum*) were ignored.

I was unlucky in losing two larvae about this time. One was almost certainly eaten by an insect (species unidentified) that I failed to observe on a sweet pea flower introduced into one of the boxes. The other was apparently the victim of the cannibalistic propensities of one of its companions with which it was inadvertently boxed.

On 24th July I made another attempt to interest the three remaining larvae in garden peas. They showed no inclination to bore through the pods but made inroads into soft peas placed inside the senna pods. The latter had been replaced by fresh ones every other day.

From 25th to 30th July progress was much more rapid and the insides of garden peas were chewed up with great avidity. The larvae were generally content to remain in the senna pods and spun threads across the entrances. Occasionally they emerged to explore peas and pea pods in the boxes.

By the morning of 30th July the larvae appeared to be fully fed and had assumed a russet colour. To encourage pupation I placed some dried sweet pea leaves in the boxes.

During the evening of 30th July I found there had been a concerted escape, presumably planned by telepathy! All three larvae had eaten through the nylon covering of their separate boxes and vanished. They were retrieved after a lengthy search, one from between a double thickness of cardboard which formed the side of a box on an old gateleg table where they were kept. The other two had cunningly concealed themselves in crevices on the underside of the table, one hidden away in a small recess behind the hinge of the table leg where it was practically invisible.

Although they seemed about to pupate I could not risk leaving them in these places and I put them all together in a tin with the dried sweet pea leaves and a few garden peas. Two of them resumed eating and exhibited restlessness for the next two days. The other one did not look in very good shape.

On the evening of 1st August, as they showed no sign of settling down to pupate on the sweet pea leaves or on dried senna pods, I gave them a few withered and curled-up leaves closely resembling them in colour. This had an immediate effect as two of the larvae promptly disappeared inside the leaves and the other (the seedy one) took up a position on the outside. None of them spun any kind of cocoon and the transition period occupied about four days, the change being very gradual. The pupae were very lightly attached to the leaves by a single thread. Initially their ground colour was light and they were heavily blotched with brown. They remained unchanged in appearance until about 13th August, when they became noticeably darker about the eyes and head.

On 18th August one of the two pupae inside the leaves became detached. By this time the blue colouring of the undeveloped wings was conspicuous and the tail end had become more or less opaque.

By the morning of 20th August the wings of one of the insects had expanded quite considerably and the whole shape was clearly visible. At this stage a muslin cage was inverted over the open tin and kept in darkness during the daytime in case the insects emerged and damaged themselves by fluttering about the cage during my absence.

On 21st August, between 9 p.m. and 11 p.m., the most advanced insect—a female—emerged under electric light. The wings expanded and dried surprisingly quickly and the insect was fluttering round the cage before 11.30 p.m.

On 23rd August a male *boeticus* emerged in daylight between 6 p.m. and 9 p.m. and on Sunday, 24th August, the last remaining insect came out at about 11 a.m. This was a male from the larva that had looked rather sickly prior to pupation. It was of normal size but badly rubbed. Before it emerged the pupa had taken on a dried-up appearance and some of the blue colouring had faded. Probably emergence had been delayed overlong and the insect had damaged itself inside the pupa-case.

Wing span was 36 mm. for the two females and 34 mm. for the male. The 'tails' of the female were of normal length but were very inconspicuous in the case of the male.

Of the 21 larvae retained by Mr. Christie, 2 died and 3 pupae dried up. An experiment was made after the insects emerged to pair off two males and two females but without success. Of the remaining 12 insects, set in good condition, 7 were females and 5 males.

It is of interest to note that the first of his insects emerged on 9th August and all of them had appeared some days before the first of mine came out on 21st August. I attribute this to the fact that he was able to procure a regular supply of Everlasting Pea and that the larval stage proceeded more smoothly and more rapidly than in my case.

On 2nd August I went down to Dorking and removed the entire clump of Everlasting Pea which, at my request, had not been tampered with and which had then ceased flowering. There were numerous

spiders on the plant and on the wall behind it but no other sign of insect life. The plant was spread out in a closed room at home and on the morning of 22nd August a female *L. boeticus* that had almost certainly emerged the previous day was found on the window-sill. It was perfectly formed but very undersized, wing span being only 27 mm. It seems probable that premature removal of the plant deprived the larvae of a certain amount of nourishment and it pupated before fully grown. Had the other eggs not been taken and the food plant been left undisturbed, the normal cycle might well have occurred under natural conditions. The fact that no other insects emerged from the plant after it was retrieved from Dorking may well be due to the thorough search to which it was subjected on 12th July.

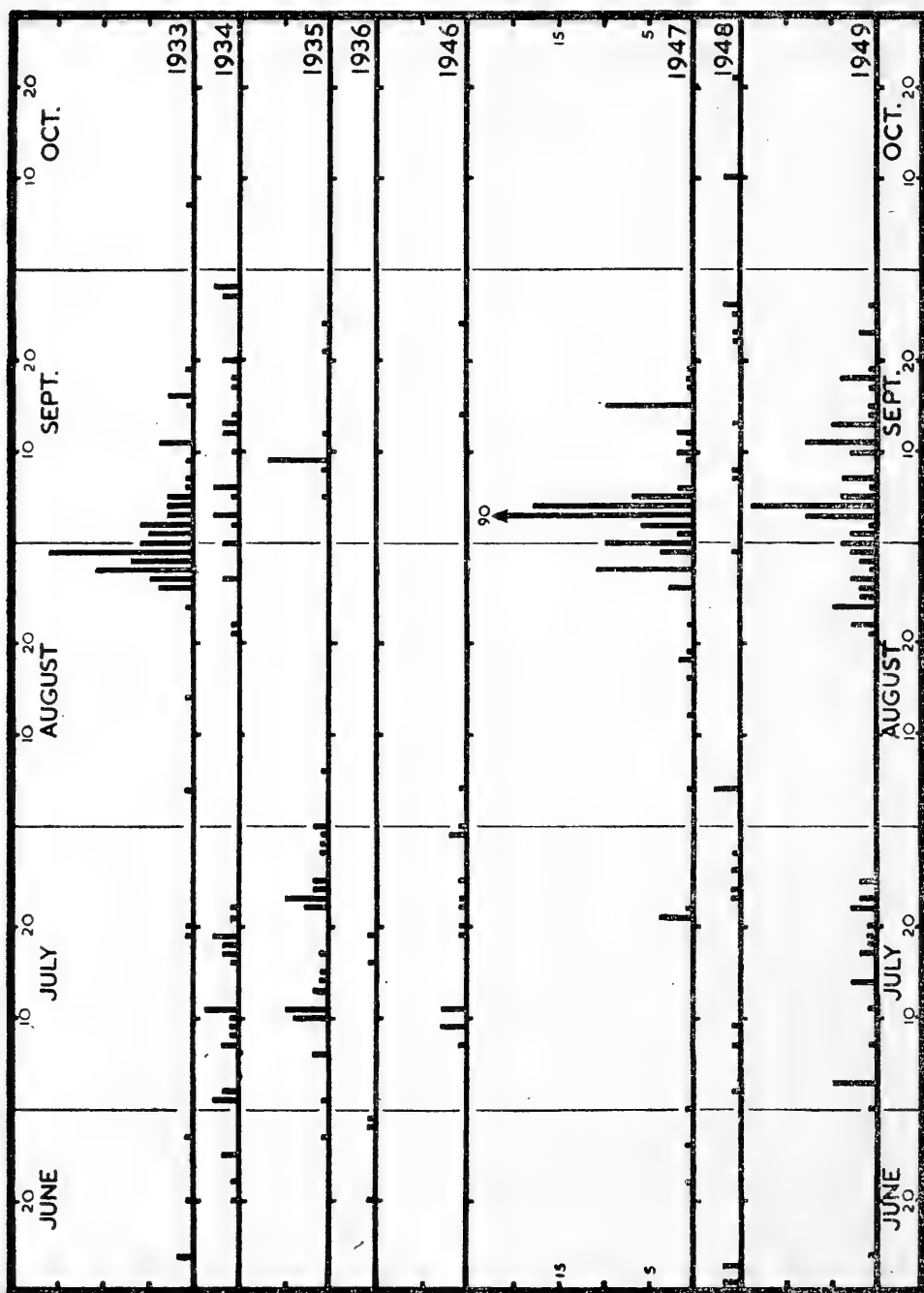
The Number of Broods of *Leucania pallens* L. in Hertfordshire

By R. A. FRENCH, B.Sc.

Two references have been made recently in the current volume of *The Entomologist's Record* to the apparent double-brooded life-cycle of *Leucania pallens* and in an attempt to shed further light on this problem the accompanying diagram has been constructed. This shows the distribution of the capture of *L. pallens* taken in a standard "Rothamsted" type light trap using a 150 watt clear bulb for two periods of four years, 1933-36, and 1946-49. The trap was operating every night from half-an-hour after sunset to half-an-hour before sunrise. In the diagram the number of individuals taken per night is shown vertically and the date of capture horizontally.

The trap was situated on the edge of one of the classical experimental fields at Rothamsted, in what can be regarded as particularly stable agricultural surroundings and the same position was occupied for the whole of the eight years. All the *pallens* caught in this trap were anaesthetised and killed by tetrachlorethane and there was, therefore, no possibility of recapture.

The year 1933 shows a number of isolated single captures occurring spasmodically throughout June, July and early August, followed by a large rise in the catch in late August and early September. The early captures are too split up to be able to demonstrate a separation into broods. In 1934, however, there is very definite evidence of two broods with a gap between them of 30 days (22 July-21 August) during which no captures were made. 1935 shows a similar picture with a gap of 30 days' duration, occurring a few days later in the season (6 August-5 September). During 1936 only five individuals were captured and hence no use can be made of this evidence. In 1946 only 18 individuals were captured and although two occurred in late September indicating the existence of a second brood it would be unsafe to draw any definite conclusions here. 1947 was rather reminiscent of the 1933 season with a number of small, widely separated catches building up to a large increase in numbers in early September, but with no clear separation into broods. The following year, 1948, appears to show a definite separation into two broods, with a gap between them of 27 days (25 July-21 August).



Thus of the eight years, four (1934, 1935, 1948 and 1949) show definite evidence in favour of two broods and there is a suggestion of a similar state of affairs in 1946. 1933 and 1947 however do not show this separation and for 1936 the evidence is too scanty. It would therefore appear that in Hertfordshire *Leucania pallens* is quite regularly double brooded.

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Vanessa cardui Linn. and other Migrants in Malta in 1952

By ANTHONY VALLETTA, F.R.E.S.

I read with great interest Brigadier C. G. Lipscomb's article "Familiar Butterflies in North Africa, II", which appeared in the June issue of this magazine (*Ent. Rec.*, 64: 168). What struck me most was his mention of "a great cloud of these butterflies [*Vanessa cardui*] flying northwards over the town and out to sea" about the middle of March. What was witnessed here in Malta from the 27th March to the first week in May was no doubt the continuation of this great North African emigration of Lepidoptera. Most unusually, the temperature in Malta rose from 50° F. on the 25th March to 70° F. on the 26th and up to 84° F. on the 29th. The wind changed direction to S.W. by S. and its force increased from 2 knots on the 26th March to 24 knots on the 29th.

On the 27th March, just an hour before sunset, I saw thousands of *V. cardui* at Mriehel, on the outskirts of B'kara. They were trying to take shelter for the night in the oleander trees. It was a sight that reminded me of the pictures we sometimes see of the American *Danaus plexippus* assembling for the night on their migratory flights.

The following morning I found two *Celerio livornica* Esp. resting in my garden and at dusk I counted seven more flying at clover. That evening *Cornifrons ulceratalis* Lederer was seen in hundreds at light, and later on *Agrotis puta* Hüb., *Nycterosea obstipata* Fab. and *Laphygma exigua* Hüb. paid visits to the lamp.

The 29th March was the hottest day so far. After lunch I went to Wied Encita collecting. *Colias croceus* Fourc., with a sprinkling of *helice*, was quite common. *Pieris brassicae* L. and *P. rapae* L. were in countless thousands. These 'whites' seemed to be more delicate and showed less resistance to the wind than the *Colias*; they tried to take shelter among the vegetation and in crevices in the rocks. Many of them which alighted to sip moisture from the mud at the edges of ponds were blown on to the water by the strong hot wind, and thousands of dead bodies were floating on the surface.

On 1st April *C. ulceratalis* was again in great force at light, as well as *Plusia gamma* L., *Agrotis ipsilon* Hufn., *A. puta*, and the Pyraustids *Nomophila noctuella* Schiff. and *Phlyctaenia ferrugalis* Hüb. (*martialis* Guen.).

On the 6th *C. croceus* was again in great numbers and this time it was accompanied by *Pontia daplidice* L. Three *Utetheisa pulchella* L. were disturbed.

On the 10th I came across *Danaus chrysippus* var. *alcippus* for the first time, at Wied Is-Sewda.

On the 11th I again visited this valley, hoping to see more *D. chrysippus*. I found that all the thistles were smothered with *V. cardui*, thousands upon thousands of them, all busy feeding at the flowers. *C. croceus* was well represented but in much smaller numbers than the *cardui*. During the morning I disturbed several *Acontia luctuosa* Schiff., *Heliothis nubigera* H.-S. and *H. peltigera* Schiff., three *C. livornica* and four *Anaitis efformata* Guen.

On the 24th fifteen *C. livornica*, two *Herse convolvuli* L. and a *Celerio euphorbiae* L. visited the honeysuckle in my garden at dusk; more of these hawkmoths kept coming up to the 7th May.

Meanwhile every thistle at Mriehel and Wied Is-Sewda was harbouring a number of larvae of *V. cardui*, but unfortunately very few reached their final instar as an *Apanteles* sp. played great havoc with them. I tried to rear a few, but over 90 per cent. were parasitized. At first I thought that there was something wrong with my breeding-cage, but a visit to the plants showed the same pitiful sight—small cotton-like balls and dried skins of caterpillars everywhere!

B'kara, Malta. 24.vii.52.

Aviemore in 1952

By CLIFFORD CRAUFURD.

In *Ent. Rec.*, 63: 214, I recorded a fortnight spent at Aviemore, Inverness-shire, from the 18th June to 2nd July in 1951. This year I was there from the 1st to the 14th July. Except for the second day, which was dull but dry, the weather for the first eight days was exceptionally warm for Scotland. The second week was not so good as a south-west wind set in, and this brought occasional drizzle or showers alternating with sunshine. I stayed with the Misses Brownlie at "Altna-Craig", an entomological home from home, where every facility is given to make collecting easy. Mr. Brownlie not only can tell one when, where, and how to find the pupae of *Amathes alpicola* but he has also fixed a flex for the m.v. lamp in the garden.

While there I met Mr. and Mrs. Harrison from Lancaster and during the last few days Mr. Leech from Formby. Mr. F. A. Noble of Birmingham travelled up with me and stayed for the fortnight. He was putting in his first fortnight collecting and setting macrolepidoptera and, being a beginner, everything was a desideratum. He discovered the localities for *Itame brunneata* and *Linnaea borealis*, to be mentioned presently.

From the daily notes in my diary I have divided my observations into various categories. The generic and specific names of the macrolepidoptera are those given by Mr. W. H. T. Tams as printed in P. B. M. Allan's *Larval Foodplants*.

I. BUTTERFLIES.

<i>Coenonympha pamphilus</i>	<i>Vanessa cardui</i>
<i>C. tullia</i>	<i>Maniola jurtina</i>
<i>Polyommatus icarus</i>	<i>Pieris brassicae</i>
<i>Aricia agestis</i> var. <i>artaxerxes</i>	<i>P. rapae</i>
<i>Argynnis selene</i>	<i>P. napi</i>
<i>A. aglaia</i>	

Only the above eleven butterflies were seen. The three Pierids were scarce and were rarely noticed away from the cabbage patches in gardens. *C. pamphilus*, *P. icarus*, *A. selene* and *M. jurtina* were fairly common. *A. agestis* var. *artaxerxes* was nearly over by 4th July, whereas last year this insect had only just emerged by that date. *C. tullia* was flying on the slopes of Craigellachie in good condition, but it can be found almost

anywhere where a fair sized area of cottongrass grows. *V. cardui* was seen on the 14th July. It was rather worn but had been flying around the spear-plume thistles. *A. aglaia* was flying as early as 4th July—about a fortnight early; they were visiting the plume thistles and self-heal in the valleys below Craigellachie. I have generally seen *A. aglaia* and *Erebia aethiops* emerging at nearly the same time—about 21st July; but *E. aethiops* had not put in an appearance when I left Aviemore.

II. MOTHS OBSERVED DURING THE DAYTIME.

1st July	<i>Plusia interrogationis</i>
<i>Odezia atrata</i>	<i>Ortholitha chenopodiata</i>
<i>Euphyia bilineata</i>	<i>Hypena proboscidalis</i>
<i>Electrophaes corylata</i>	8th July
<i>Campaea margaritata</i>	<i>Itame brunneata</i>
<i>Calostigia pectinataria</i>	<i>Lycophotia varia</i>
2nd July	<i>Xanthorhoe designata</i>
<i>Alcis repandata</i>	9th July
<i>Dysstroma truncata</i> , or	<i>Hadena conspersa</i>
<i>D. citrata</i>	10th July
<i>Ortholitha mucronata</i>	<i>Lyncometra ocellata</i>
<i>Alcis rhomboidaria</i>	<i>Eurois occulta</i>
<i>Xanthorhoe montanata</i>	<i>Thera firmata</i>
3rd July	12th July
<i>Ellopiia fasciaria</i>	<i>Apamea crenata</i>
<i>Entephria caesiata</i>	<i>Perizoma blandiata</i>
<i>Rupalus piniaria</i>	<i>Cerapteryx graminis</i>
<i>Thera cognata</i>	13th July
<i>Cabera exanthemata</i>	<i>Epirrhoe alternata</i>
6th July	<i>Eupithecia nanata</i>
<i>Apatele leporina</i>	<i>Apatele psi</i>
<i>Triphaena pronuba</i>	<i>Hepialus fusconebulosa</i>
<i>Orthonama lignata</i>	14th July
7th July	<i>Plusia festucae</i>
<i>Lophopteryx capucina</i>	<i>Apamea lithoxylea</i>
<i>Pheosia gnoma</i>	

As butterflies were scarce a good deal of time was spent in searching the rocks and tree-trunks, and many species were found, among them *C. margaritata*, *C. pectinataria* and *A. repandata*—the last-named in some very light forms. *D. truncata* or *D. citrata* (I cannot distinguish them) showed great variation, some with a white central band and others with an orange central band, with many gradations between. *E. caesiata* was common and a good deal of variation was noticed. *A. leporina*, *T. pronuba* and *O. lignata* were found on oak trunks, but the first-named was worn as were the one or two others of this species seen. *I. brunneata* though exceedingly local flies freely in the sunshine and as many as a dozen can be seen in the air at once. The solitary *H. conspersa* was resting on a railway bridge and was much darker than those of the south of England. I found only one *E. occulta* on a birch trunk: it had newly emerged. *P. blandiata* was taken by Mr. Leech. I had been told that it could be taken only at Kinloch Rannoch, but in addition to finding it there I have taken it at Aviemore and Grantown-on-Spey.

The specimens of *Hepialus fusconebulosa* taken by Mr. Noble on Craigel-lachie in the evening were prettily marked and much brighter than the southern type. He took also ab. *gallicus* Lederer, depicted in *South*, plate 158. One *P. interrogationis* was taken flying over the heather and Mr. Leech took a newly emerged *P. festucae* on a rush on 14th July: a very beautiful insect with upstanding thoracic tuft. On the 3rd July Mr. and Mrs. Harrison kindly took Mr. Noble and me by car to Loch Morlich, and Cairngorm was climbed to where the crowberry (*Empetrum nigrum*) grew in abundance, and a search was made for the pupae of *Amathes alpicola*. Mr. Noble and I were unlucky, but Mrs. Harrison was more patient and some were found which produced moths before we left Aviemore. A fortnight earlier would, however, have brought us better luck.

The larvae of *Endromis versicolora* were nearly full grown and only five were found. Two larvae of *Lasiocampa quercus* f. *callunae* were seen on the heather one of which was hanging limp from what I presume was a disease. One *Trichiura crataegi* larva was found on birch up the Burmah road.

III. MOTHS FOUND ON THISTLES.

7th July

Plusia bractea
P. chrysitis
P. pulchrina
P. interrogationis

9th July

Plusia festucae
Amathes baia

10th July

Graphiphora augur

11th July

Leucania impura
L. pallens
Cucullia umbratica

8th July

Anaplectoides prasina
Leucania comma
Apamea furva
A. crenata
A. monoglypha
Amathes triangulum

13th July

Orthonama lignata
Xanthorhoe designata
Triphaena pronuba

About half an hour after sunset visits were paid to the melancholy thistles (*Oniscus heterophyllus*) along the Spey bank. It is a very jolly thistle and the moths are very fond of it. It provided all five of the above *Plusia*, of which *P. pulchrina* was the commonest, then *bractea*, *festucae* (3) and *interrogationis* (2). A worn *A. prasina* was also taken but provided no eggs. One or two melanic *H. furva* were netted, and *G. augur* flew freely at the thistles. One *C. umbratica* and a *P. bractea* were taken off the same thistle head when feeding together. *P. gamma* was not seen during the fortnight.

IV. MOTHS TAKEN AT SUGAR.

1st July

Eurois occulta
Triphaena pronuba
Hyppa rectilinea
Diarsia rubi
Apamea caracterea
Hadena contigua

4th July

Polia hepatica
Euplexia lucipara
Thyatira batis
Amphipyra tragopoginis
Procus furuncula
Amathes sexstrigata

<i>Apatele leporina</i>	6th July	<i>Apamea monoglypha</i>
<i>Apamea unanimis</i>		<i>Tethea duplaris</i>
2nd July		
<i>Eumichtis adusta</i>	7th July	<i>Leucania pallens</i>
<i>Agrotis exclamationis</i>		<i>Cerapteryx graminis</i>
<i>Rusina umbratica</i>		<i>Apatele psi</i>
<i>Ochropleura plecta</i>		<i>Amathes c-nigrum</i>
<i>Amathes xanthographa</i>		<i>Leucania comma</i>
<i>Apamea crenata</i>		
<i>A. furva</i>	13th July	<i>Triphaena sobrina</i>
<i>Leucania impura</i>		<i>Diarsia brunnea</i>
<i>Procus strigilis</i>		<i>Anaplectoides prasina</i>
<i>Ceramica pisi</i>		
5th July		
<i>Diataraxia oleracea</i>		

E. occulta was one of the commonest moths at sugar, but many of them were descaled though a large number were freshly emerged. *H. rectilinea*, *A. leporina*, *E. adusta*, *R. umbratica*, *H. contigua* and *L. varia* were few and past their best, but *D. rubi* and *A. xanthographa* were in good condition and some nice reddish forms of the latter were seen. The usual melanic forms of *A. monoglypha* and some very dark *T. pronuba* were taken. On the last night one fresh *T. sobrina* and one *D. brunnea* were boxed. One *A. prasina* was also taken, but again we failed to obtain eggs.

V. OTHER INSECTS.

On 4th July *Pedicia rivosa*; 13th July *Machimus atricapillus* and *Tabanus sudeticus*.

The very large Tipula *P. rivosa* was found on a birch trunk, and the robber flies were noticed on the granite boulders. One was finishing a meal when observed. The gadfly *T. sudeticus* was also on a rock and though not threatening us was taken.

VI. PLANTS AND BIRDS.

Among a great many others three interesting plants were noticed: *Gymnadenia conopsea* (sweet-scented orchis), *Pyrola media* (intermediate wintergreen) and *Antennaria dioica* (mountain everlasting). On the 5th July at the foot of Cairngorm Mr. Noble found *Linnaea borealis* and on the 7th a second patch of this plant was discovered.

On 3rd July while up the side of Cairngorm a family of red grouse (4) would not stay near at hand long enough to have their photographs taken, and a pack of ptarmigan (about 16) were flying on the mountain side at about 2,500 feet. In the oak wood about a mile north of Aviemore a woodcock sat motionless for about ten minutes at six feet from us while Mr. Noble and I regretted he had not brought the necessary close-up lens for his camera. It was still sitting there when we left. There is a good number of woodcock around Aviemore. Though buzzard and raven had been seen earlier I did not notice either of them above Craigellachie this time.

In addition to being an excellent collecting ground for the lepidopterist Aviemore offers a great many delights for the general naturalist,

the botanist and the ornithologist. Red deer and blue hare can be seen and watched above Craigellachie, black and red grouse and ptarmigan on Cairngorm, a large number of rare plants is to be found, and there are over a dozen beautiful and interesting lochs to be visited within walking distance (if you are a good walker). Those who would like a really good and profitable holiday—and who would not?—should go to Aviemore.

Field Notes

When John T. Carrington became editor of *The Entomologist* in 1877 he at once made a plea for more widespread field work by his readers. "So far as I am aware," he wrote in January that year, "there has not been a single Macro-Lepidopteron added to the British fauna" since *The Entomologist's Annual* had ceased publication in 1874. "I very much doubt," he added, "whether such a thing has previously happened during any like period in the present century. What is the matter? . . . I reluctantly, but nevertheless fear I must, accuse the majority of our Lepidopterists with want of care and observation whilst out collecting." He then went on to allege that "We never go to an unworked locality."

That lepidopterists to-day lack "care and observation" we do not believe; but there can be no doubt at all about the truth of Carrington's second indictment. We go to the New Forest or Ham Street or Folkestone or Aviemore or Rannoch or some such overworked place where we know we shall fill our setting-boards; at new ground we look askance: we might get nothing at all there. Even in the New Forest we stay at Brockenhurst and Lyndhurst and 'work' only the districts round about those towns. The reason for this restriction is that there are blanks in our cabinet which must, and can, be filled. Time enough to explore new places when we have amassed at least a short series of everything our friends have taken. Also we have our wives and children to consider when we arrange our annual holiday.

And so we go on year after year. Meanwhile *furcifera* has become almost mythical; *sagittata* and *atriplicis* are written off as extinct; nobody searches the fenland fringes for *strigosa* and *lamba*; *auricoma* is a 'has-been'; and so on and so forth with every one of our 'rarest' species. The trouble with some of these moths of course is the unseasonable time at which they are on the wing: who is going to stop at some small public house in a remote part of the fens or in a Glamorganshire valley in late October on the chance of finding *lamda* or *furcifera*? But have we no time for larva-hunting? Is it essential that we take a net with us on our summer holiday?

It is very much to be doubted whether any of the species just mentioned is 'extinct'. How many lepidopterists are aware that *Maculinea arion* L. occurs in the middle of Devonshire, that *Hadena dysodea* is by no means extinct in one of the Home Counties, that Wiltshire is a home of *Pachetra leucophaea* (*sagittigera*)? Who has yet explored, entomologically, the foothills of the Black Mountains or the upper reaches of the Torridge; who has tried the m.v. lamp on Exmoor or the upland moors of Montgomeryshire for *Epicnaptera ilicifolia*; who has

worked those extensive West Country marshes where J. C. Dale took the Gipsy Moth, where *Lycaena virgaureae* L. used to be taken, and whence 'copper butterflies' were reported to W. F. Kirby so lately as 1899?

Who has searched the teasel heads ("in no instance did I observe it on any other plant" wrote Weaver a century ago) between Yaxley and Holme at dusk in July for *Caenophila subrosea*, the only place where it ever occurred and where possibly it may still exist? We ourselves have known species reappear after an absence of fifteen years, and when *subrosea* had been reported consistently absent for ten years no one troubled to look for it again. What a paradox it is that the petrol engine should have so restricted our fields of activity! In the days when one rode about the country on horseback or bicycle more original field work of the right kind was done than has ever been done since.

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Euzophera cinerosella Zell. can now be obtained by collecting the lower portion of the stem and beginning of the root-stock of *Artemisia absinthium*. If the locality be carefully chosen the beautiful Tortrix *Eucosma pupillana* Clerck, the larvae of which feeds in the crown and root-stocks of the same plant at the same time, will also be found. The best way to obtain both is to plant two or three clumps of *Artemisia* close together in the garden, and leave a space in the middle for another plant. When they have been growing a year a plant can then be dug up from a locality where both moths are found and planted in the vacant space. In a year or so the established clumps will contain a good number of *pupillana* and be riddled by *cinerosella*. I practised this method about 1930, the infested plant being given me from Chatteris, Cambridgeshire, by the late Sir John Fryer, and had both species established until the late war, when I totally gave up gardening and the ensuing jungle killed all the *Artemisia*. I found that the best way to get *pupillana* was to walk round the clumps on a warm evening and net it as it slowly buzzed about, but I broke off old stems in April and placed them in a breeding-cage to get the more abundant but sluggish *artemisiella*.

Adaina microdactyla Hübn. Dead stems of hemp agrimony (*Eupatorium cannabinum*) should be examined from October onwards. If small holes are perceptible the stems should be collected for larvae of *microdactyla* which is easy to breed if the stems are kept out of doors till April to prevent undue dryness. I recommend an early collection as apart from the attacks of birds the old stems are somewhat likely to be injured by heavy wind or rain, being rather brittle.

If *Orneodes hexadactyla* Linn. be required a search in its hibernating quarters in October is usually successful. The presence of the moth can be detected as a rule by odd specimens in the house, and then a systematic beating of the thatch or barns and summerhouses will produce plenty. Earlier it turns up in thickets in woods, buzzing out

when disturbed. I have often taken it when collecting autumn *Peroneas*.

Peronea cristana Fabr. Should the opportunity arise do not cease working for *cristana* until the end of October, unless a heavy frost has occurred to drive it into hibernation. On a warm day it may be beaten out in its usual haunts until the beginning of November. The Gullivers of Brockenhurst always averred that the rarer aberrations were usually amongst the later emerging specimens. Whilst this seems absurd I certainly have had good luck there in October, and Mr. Sheldon, for whom the Gullivers collected for some years, told me they got him some rare aberrations in the latter part of the *cristana* season. At Brockenhurst also, with the later *cristana*, the lovely silver and claret form of *P. logiana* Schiff. used to occur. Its larva fed on the tall straggling bushes of *Viburnum opulus* in the thickets and it came out of the bushes with the *cristana*.

Eucosma turbidana Treits. Towards the end of October the root-crowns of the butterbur should be dug up for the larva of this insect. The mined ones will easily be detected and if pulled partially apart will disclose the large white maggot-like larva within. They should be dug up and potted with good drainage in a large-sized flower-pot. This may be covered with muslin at the end of May or the pot may be judiciously emptied when the cocoons of *turbidana*, which leaves the food-plant to pupate, will be disclosed. The cocoons are about $\frac{3}{4}$ inch long, egg-shaped, and made of earth well lined with thick silk. The cocoons when recovered may be placed in an ordinary breeding-cage but should not get too dry.

E. turbidana is another moth that is much commoner than is usually supposed and I should never despair of finding it where butterbur grows. In 1929 I was out with the late Mr. W. Fassnidge near Southampton when we noticed a lot of butterbur. I suggested he should look for *turbidana*, which I had already bred from the North of England, and the following year he found it there.

Practical Hints

There are always some larvae which are late in feeding up, and these may be beaten from trees and shrubs as long as there are any eatable leaves left. *Calocasia coryli*, the nut-tree tussock, is one of these and we have beaten it from both beech and hazel quite late in the autumn. It has a variety of foodplants, probably 'local preferences' though we have found it on both the above-mentioned plants in the same locality. Its larva most often spins up among debris at the foot of the tree or shrub, but is quite often to be found (by means of the moss-pick illustrated in *Ent. Rec.*, 63: 284) under moss on the trunk or big roots.

Gently rake back from the trunk the pine-needles and soil at the foot of Scots firs growing on the southern fringes of pinewoods. Pupae of *Hyloicus pinastri*, *Panolis flammea*, *Semiothisa liturata* and *Bupalus piniaria* may reward your efforts.

If October has been a dry month it is not too late to collect webs of *Melitaea aurinia*. After the winter rains set in the nests are very difficult to find, even when one has marked the site with a stick.

Before the next issue of this magazine is published *Ptilophora plumigera* will be on the wing in its chosen haunts. Probably it is much more widely distributed than most people think. Few lepidopterists make a practice of assiduously and consistently searching maple growing in hedges (the south side) or as bushes on hillsides for the eggs and larvae of this moth, and fewer still who will leave a warm fireside on a murky November night in order to work lamp and sheet at some distant spot, to be reached perhaps only after a tramp in the darkness along muddy footpaths. Towards the end of the first week of November is the normal time for its emergence and a petrol (? or m.v.) lamp on a sheet in some likely place where maples and sycamores grow would reveal *plumigera* if present.

The larvae of several of the 'Pugs'—*Eupithecia subfulvata*, *E. castigata*, *E. jasionata*, *E. absinthiata*, *E. succenturiata*—are available until well on in October, *succenturiata* until November. Collectors in the southern coastal counties should search or beat the seed-heads of yarrow this month for larvae of the 'new' Pug—*E. millefoliata* (see *Ent. Rec.*, 63: 217, 299).

Larvae of *Eupithecia intricata* Zell. ssp. *arceuthata* may still be available (it has been taken in November). The known foodplants are juniper (both common and *J. sabina*), Monterey Cypress (*Cupressus macrocarpa*), and other ornamental cypresses (*Lawsoniana*, *allumii*, etc.), perhaps also allied genera. Has occurred in various counties of the southern half of England and is possibly more widespread than is known at present. Extremely difficult to beat but readily found—at least when on *C. macrocarpa*—with a torch at night.

Notes and Observations

ABROSTOLA TRIPARTITA HUFN. IN MAY.—I notice that a correspondent reports, at page 218, a specimen of *Abrostola tripartita* Hufn. at light in Devon as early as 1st-2nd May. Here in the Hebrides I had this species in my moth-trap on the night of 7th-8th May. On the night of 4th-5th May I had 2 specimens of *Hadena conspersa* Schiff.—J. L. CAMPBELL, Isle of Canna, Scotland. 25.viii.52.

CONDITION OF MIGRATING BUTTERFLIES.—I agree with what you say (*Ent. Rec.*, 63: 136) about freshness being no proof that an insect has not migrated. An airborne bird or insect is part of the air-stream itself and the air or wind cannot ruffle its feathers or scales. The occasional Clouded Yellows I have seen in the Hebrides were nearly all fresh looking. By the way, I saw a *Satyrus semele* L. take off on a very confident flight in the direction of Skye (10 miles away) on a fine day when I was out hauling lobster creels. This (and other evidence) seems to show that most butterflies here inhabit a group of islands indifferently, rather than a restricted spot.—J. L. CAMPBELL, Isle of Canna, Scotland. 25.viii.52.

VANESSA CARDUI L. IN GERMANY IN 1952.—This species has immigrated into Germany in considerable numbers this year and is strikingly abundant. In April I observed a whole succession of them passing by, obviously migrating. Meanwhile they have bred and multiplied considerably. I have also come across *V. cardui* this year in the Alps at a height of 2,000 metres, both larvae and imagines.—Dr. GUSTAF DE LATTIN, Siebeldingen über Landau-Pfalz. 26.viii.52.

TETHEA OR SCHIFF.: POSSIBLE SECOND BROOD IN 1952.—Two specimens of *T. or Schiff.* were seen by me at sugar in Orestone Woods near Ashford, Kent, on 16th August 1952. One of these I unfortunately missed, but the other which I took has a wing expanse slightly smaller than is usual with this species. The specimen is somewhat worn, but in view of the exceptionally late date it must I think be one of a second brood.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 28.viii.52.

CACOEZIA PRONUBANA HÜBN. IN LONDON.—I saw a single specimen of this species flying in the morning sunshine by Waterloo railway station on 25th August 1952.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 28.viii.52.

SECOND BROOD OF *ANTHOCARIS CARDAMINES* L.—On 21st August last, whilst sitting in my garden at Tulse Hill (which lies in the Borough of Lambeth) my wife and I observed a male Orange-tip. I do not think there is any possible doubt as to the identity of the insect; but unfortunately I had no net available at the time. Barrett (*Lep. Br. Is.*, I, 29) records that in 1886 "several specimens of a second emergence were seen and captured in the neighbourhood of Maidenhead in the middle of September, and one was taken in August of that year in Sussex." Frohawk (*Comp. Book of Brit. Butterflies*, 1934, p. 316) has "Occasionally specimens occur in August and even as late as September; these probably are representatives of a second brood". This second brood, however, is sufficiently uncommon to deserve recording.—Canon T. G. EDWARDS, Holy Trinity Vicarage, Tulse Hill, London, S.W.2. 23.viii.52.

HERSE CONVULVULI L. IN DORSET.—A female *Herse convolvuli* L. in excellent condition was brought to me for identification on 18th August last. It was taken by a group of Portland schoolboys after it had been flushed from the folds of an improvised tent. This is the first report of this species that has come to my notice locally this year. It will be interesting to hear if *convolvuli* has appeared elsewhere.—V. W. PHILPOTT, 67 Mount Pleasant Avenue, Radipole, Weymouth. 20.viii.52.

COLIAS CROCEUS FOURC. IN EAST HERTS. IN 1952.—On 21st August a local boy brought me a ♀ *C. croceus* which he had taken about half a mile from this town. It was much worn; we tried to obtain eggs but it died next day. On 25th August he obtained a male from the same field—also rather worn. On 26th August he saw 6 males and on the 27th obtained a fresh female. This female, after being sugar-fed, has laid many eggs. He saw 4 ♂♂ on 28th August, and on the 29th four more in the same lucerne field. Six ♂♂ were seen on 30th August, and on 2nd September 6 ♂♂ and 2 *helice*. One *helice* was taken for eggs and

although sugar-fed has not yet laid. On 4th September, a dull day, one ♂ *croceus* was seen, and yesterday, 5th September, 2 more ♂♂ were flying although the wind was rather cold.

In all, 30 ♂♂, 2 type ♀♀, and 2 *helice* have occurred in the same field. It is of course possible that the ♂♂ have been counted more than once as my friend collects only a male and a female of each species and all captured ♂♂ were released when he left the field each day. The preponderance of ♂♂ to ♀♀ was, however, from my own observation, very large. The earlier specimens were somewhat worn, but the later ones were in fresh condition. If the weather remains suitable there will probably be a fair emergence at the beginning of October.—C. CRAUFURD, Denny, Galloway Road, Bishop's Stortford, Herts. 6.ix.52.

COLIAS CROCEUS FOURC. IN THE ISLE OF PURBECK.—A specimen of *Colias croceus* Fourc. was observed near Warbarrow Bay on 12th August and another one on the Downs at Swanage on 14th August. Both were males and in fair condition. *Vanessa cardui*, *V. atalanta* and *P. c-album* have been very abundant in the Swanage district.—LEONARD TATCHELL, Rockleigh Cottage, Swanage, Dorset. 17.viii.52.

CUCULLIA ABSINTHII LINN. IN SOUTH YORKS.—The 'Wormwood Shark,' which recently has spread so rapidly in the Midlands, has now put in an appearance in S. Yorks., near Rotherham. On the 5th of September 1952 I found an almost fully-grown larva, quite by accident, lying on the bare earth close to a Wormwood plant. This larva was almost dead, due, I think, to parasites, but a quick search of the patch of *Absinthium* resulted in 24 larvae varying in size from half-an-inch to almost fully grown. The larva tallies exactly with the excellent description given by H. E. Hammond in *Entomologist's Gazette* (2: 193). Wormwood is a common plant on the slag heaps in this area.—T. H. FORD, 275 Derbyshire Lane, Sheffield, 8. 6.ix.52.

PARARGE AEGERIA LINN. IN KENT.—In connection with the spread of the Wood Argus, *Pararge aegeria* Linn. in Kent, it may be of interest to record that I saw four of these insects at West Hythe, near Lympne, on 31st August 1952, and succeeded in capturing one. This was rather worn, though not by any means a wreck. Two of the others were endeavouring to pair.—ROY CHEESEMAN, Snowdonia, Thanington Road, Canterbury, Kent. 4.ix.52.

MACROGLOSSUM STELLATARUM LINN. IN CORNWALL.—You may be interested in the following records of *M. stellatarum* in the Redruth district of Cornwall. 1st July, one seen; 13th July, one; 16th July, one. It may also be of interest to note that I took a *Herse convolvuli* L. at rest on a telegraph-post to-day (5th September).—W. G. TREMEWAN, Wheal Rose, Scorrier, Redruth, Cornwall. 5.ix.52.

THE SUPPOSED 'THIRD BROOD' OF *LYCAENA PHLAEAS* L.—Mr. Castle Russell's note (*Ent. Rec.*, 64, 148) is very interesting but I think he is misunderstanding me. In 1949 (not 1941 by the way) I said I did not believe there were "Fourth" broods and that late examples were not Fourth broods but extended emergences of the Third brood. I also stated that I thought the Third broods were generally only partial, a proportion of them hibernating as larvae over the winter.

Mr. Castle Russell's experience fits in well with this idea as although he obtained a large emergence from what was no doubt a Third brood, that was also a partial emergence as about 7% apparently did not emerge that autumn and presumably hibernated as larvae. But I do not believe in Britain that we ever get four broods in one year.—P. SIVITER SMITH, 21 Melville Hall, Birmingham. 25.viii.52.

EUBLEMMA PARVA HÜBN. IN SOMERSET.—A specimen of this rare migrant was taken in my light-trap at Bickenhall, Somerset, on 9th July last.—A. H. TURNER, Forest Drive, Bickenhall, Somerset. 3.ix.52.

MIGRANTS AT TRING IN 1952.—In a m.v. lamp-trap in my garden here I took a worn male *Plusia ni* Hübn. on 23.viii.1952, 6 male *Laphygma exigua* Hübn. between 12 and 20.viii.1952, and 1 female on 28.viii.1952. *Plusia ni* is a new record for the county.—A. L. GOODSON, 26 Park Road, Tring, Hertfordshire. 8.ix.52.

A GYNANDROMORPH OF BUPALUS PINIARIA L.—In June 1946 I bred from a wild Oxshott larva a gynandromorph of *Bupalus piniaria* L. The insect is in general appearance a large and well-marked ♀, having a deep chestnut-brown ground colour and large and dark fuscous apical markings. The left antenna is female, but rather thicker than usual. The right antenna has short pectinations on its basal half. The left hindwing is entirely female; the other wings show male markings as follows:—

Left forewing: a black streak from the discoidal spot to the outer margin, widening outwards and thickened at about two-thirds of its length; a small black streak on the subcostal, above the discoidal; a short black streak and three small black spots near the outer margin; the median nervure slightly thickened; a yellow streak below the cell, extending outwards towards, but not approaching, the outer margin.

Right forewing: a heavy black streak from the cell to outer margin; a smaller streak on the subcostal.

Right hindwing: a narrow yellow streak from the region of the discoidal to the outer margin.—E. S. A. BAYNES, 2 Arkendale Road, Glenageary, Co. Dublin.

PIERIS NAPI L. AB. FLAVA—KANE OR W. H. EDWARDS?—In an American publication, *Papilio*, vol. I, dated New York, 1881, W. H. Edwards figures three yellow *napi*, pl. 2, fig. 7, and pl. 3, figs. 10 and 11. One of these, pl. 3, fig. 10, is a ♂ and may be an error, but the other two are ♀♀ and all have the white ground colour on the underside of the forewing as in the sex-limited ♀ form usually called ab. *flava* Kane. Unfortunately in the "Description of plates" the author only indicates to which of his "forms"—a word which he does not connect with colour aberrations—these insects belong. In a "Table", however, on p. 98, appear the words "aberr. ♀ flava" and, lower in the same table, "aberr. flava". In the body of the long and involved text Edwards refers to yellow specimens but does not give them a name, leaving us to associate these yellow butterflies with the aberrations "flava" in the "table", only by inference. If this haphazard method of introducing a new name could be valid under the International Code it means that Edwards's use of the word *flava* antedates Kane by twelve years.

If it was not for the ♂ on pl. 3, fig. 10, this form would seem to be the same as Kane's but if there is no doubt about the sex of this specimen the two butterflies on pl. 3 appear to be of a form only known in America. There is, however, still the ♀ on pl. 2, fig. 7, which may be of the same form as our British "flava". I am indebted to Mr. C. F. dos Passos of Mendham, N. J., for drawing my attention to this article in *Papilio*.—J. ANTONY THOMPSON, Milton Lodge School, Wells, Somerset. 13.viii.52.

[A better heading for Mr. Antony Thompson's note would be *Pieris napi* L. ab. *flava* Edwards or ab. *flavescens* Tutt? If *flava* Edwards is accepted for the ochreous or saffron yellow form of female with the discal area on the under side white, it is the earliest name, and *aurea* Mosley, 1896, and *flavescens* Tutt, 1896, will become synonyms. Until the rare coloured plate in the Naturalist's Journal has been consulted, it will remain doubtful whether *aurea* has a white discal area on the under side or not, and so for the present I am using *flavescens*. *Flava* Kane, 1893, is preoccupied by *flava* Cockerell, 1889, which is a synonym of *sulphurea* Schöyen, 1885, the aberration with both surfaces yellow all over and occurring in both sexes.

Ab. *flava* is only mentioned in a table under "winter form *venosa* Scudder" and again under "summer form *acadica*". It is not mentioned in the text or in the legend attached to the plates, and though the order in the table and in the legend is the same, it can only be attached to the figures by inference. According to the Rules, strictly interpreted, it is a nomen nudum. Some lepidopterists may allow Edwards the benefit of the doubt and make the inference required to render the name valid. Even then there are strong objections to applying it to a British aberration. The form may be a mutant peculiar to America. In the Californian form *venosa* yellow females are said to occur rather commonly. The figure, Pl. 2, fig. 7, represents a pure yellow insect different in colour from ab. *flavescens* Tutt. Pl. 3, figs. 10 and 11, represent the male and female of ssp. *acadica* from Newfoundland and are both pale citron yellow. The text makes it probable that the male should be white and that the pale yellow colour is a mistake of the artist. If, however, it occurs in both sexes, it cannot be the same as ab. *flavescens* Tutt, and in any case yellow is unlike the yellow of that aberration. In view of the difference in the yellow colour and the doubt about the existence of yellow males it would be unwise for such lenient lepidopterists to accept ab. *flava* Edwards as the name for any British aberration of *napi* until more is known about the American yellow forms. I adhere strictly to the Rules and regard ab. *flava* Edwards as a nomen nudum.—EDITOR.]

ORESSIGENA—A NOMEN NUDUM.—The following appears in "The Origin and History of the British Macrolepidoptera," by Bryan P. Beirne, *Trans. Roy. ent. Soc. Lond.*, 1947, 98, 291:—

"*Dysstroma concinnata* Stephens, whose distribution probably has not been fully worked out, may have survived the second glacial phase only on the glacial land to the west, and not to the south of the ice-fronts in England. It has been found in the Scottish Highlands, the Hebrides, and the mountains of western Ireland. It is represented

by a distinct subspecies, *oressigena*, in Ireland. Like the other species, it probably was a first glacial phase arrival."

Oressigena is a manuscript name given by Donovan and after careful enquiry I think it is safe to say that it has never been published. Beirne uses the name, but gives no author, no reference, and no description, for it has been ruled that a locality does not constitute a description. Therefore *oressigena* is a nomen nudum.

I have in front of me a series of 83 specimens labelled *oressigena* by Donovan, who accepted *concinata* as a species distinct from *truncata* Hufnagel and regarded his Irish specimens as a ssp. of *concinata*. To my eye many of these are indistinguishable from *truncata* from England and elsewhere. They are very variable and none are like *concinata* from Arran. I do not think the single brooded *truncata* from the mountains of western Ireland is a subspecies, and in my opinion *oressigena* should remain a nomen nudum.—E. A. COCKAYNE.

A NOTE ON EMBIA.—It is curious how little we hear of the *Embiidae*. I have collected pretty widely in warm countries and always have my eyes open, yet have very seldom come across them. The standard works tell us that they are subsocial and live in silken galleries and that there are about 140 species known, but it is difficult to find anybody who knows anything about them systematically.

The only precise reference that I can find in the few books that I have available is by Rimski-Korsakoff, in a Russian book on the Animal World of the U.S.S.R. He states that there are 12 species in the Palaearctic Region, of which only two are known from the vast area of the Soviet Union. One of these is apterous, *Haploembia taurica*, endemic in the Crimea, where it is common along the coast, but I did not find one when I was there. The other is *Embia tartara*, a winged form common in Central Asia. He gives a figure of an apterous female of *Haploembia ramburi* from the south of France and alludes to a monograph of the order by my old friend H. Krauss.

On 11th September 1950 I recognised my first *Embia* running swiftly along my leg as I was sitting in my garden in Bebek and the next day I was surprised to see one running across the counter of a grocer's shop in Istanbul. On 25th August 1951 one skimmed nimbly across my newspaper when I was reading in my garden, but he was too quick for me. Several times in September last year I caught a glimpse of one and once or twice they flew in the hot sunshine. Superficially they look like earwigs when running, but are even quicker in their movements and I did not succeed in catching one—since they always got me unawares—till my wife produced one out of her handbag.—MALCOLM BURR.

Collecting Notes

A NOTE FROM SHEFFIELD.—Things have been a bit quiet since the beginning of June. The weather has not been good down here, and in spite of the very early appearances in the spring the latest are not much earlier than those of last year, which itself was a late season. But I did see several *Enargia paleacea* near York on the 24th of this month; this seems to be quite early—W. REID, 6 Whirlow Park Road, Sheffield. 28.vii.52.

LIGHT-TRAP RECORDS IN SOMERSET (*continued from page 186*).—*May*.—Rainfall was much above the average, but sunshine about normal, and the night temperatures fairly high.

In addition to hosts of the usual visitors a solitary *Cerura hermelinea* appeared on 13th, and on 17th a large take included *Apatele rumicis* (subsequently common), *Anagoga pulveraria* and *Lobophora halterata*. *Euplexia lucipara* and *Ceramica pisi* were taken on 18th and during next few days; both are generally uncommon in the area. *Lampropteryx suffumata*, another solitary capture on 19th, and *Meristis trigrammica* on 20th were early. *Rusina umbratica* on 21st was very early, but was not seen again, although it is usually very common. A single *Hypocrita jacobaeae* was in the trap on 25th. This species was formerly abundant in the district, but during the last few years has practically disappeared. I seldom see a larva on the Ragwort. The 27th was a night when the moths were too numerous to cope with: captures included many *Arctia villica*, *Phalera bucephala* and *Apatele leporina*, several *Apatele alni*, *Tethea ocularis* and a few each of *Leucania comma*, *Perizoma affinitata*, *P. alchemillata* and *Plagodis dolabraria*. On the same night a most unusual capture was *Pseudopanthera macularia*, which must have come several miles from its birthplace.

June.—Rainfall was nearly twice the normal and the sunshine was deficient, but temperatures were about average. I was away during the first half of the month, and on returning only experienced two nights when anything of interest turned up: on 22nd *Sphinx ligustri* came in force, in fact 'he' became a bit of a nuisance (no females were seen at the trap); a solitary *Deilephila porcellus*, which is always uncommon here, and one *Hecatera serena*, my first record for Bickenhall. *Lygris mellinata*, *Angerona prunaria*, and *Pyrausta olivalis* also arrived and were afterwards frequent. On 26th numbers were again high; first records being made of *Habrosyne derasa*, *Craniophora ligustri*, *Laspheyria flexula*, *Plemyra bicolorata*, *Nymphula nymphaeata* and *Notoelia uddmanniana*. The first *Agrotis ypsilon* was the forerunner of what has proved to be an army of this species, equalling *Triphaena pronuba* in numbers. The 26th also produced the first record of *Ellopiopsis praeapariaria*, a quite unsuitable spot, and he must have made a long journey.

July.—A month of very low rainfall, fairly high night temperatures and sunshine a little below the normal. The trap produced several species new to the district, or at least very infrequent, including *Pseudoips bicolorana*, *Amathes triangulum*, *Hecatera chenopodii*, *Leucania pudorina* and *Zanclognatha nemoralis* on 1st: *Peronea boscana* on 4th: *Eublemma parva* on 9th: *Ypsolophus xylostellus* on 18th: *Hydraecia ophiogramma*, *Zenobia subtusa* and *Hydrelia flammeolaria* on 21st: *Crambus pinellus* and *Evergestis pallidata* on 23rd. Other interesting arrivals were *Gastropacha quercifolia*, *Parastichtis ypsilon*, *Plusia v-aureum*, *Zanclognatha tarsipennalis*, *Phlyctaenia crocealis* and *P. coronata* on 1st: *Miltochrista miniata*, *Plusia iota*, *Zenobia retusa* and *Hemistola immaculata* on 9th: *Mycina asinalis* on 18th, and subsequently very common: *Lymantria monacha* and *Zeuzera pyrina* on 19th: *Lampra fimbriata* (the only two this Summer), *Cosmia affinis*, *Deuteronomos fuscantaria* and *Euzophora pinguis* on 21st: *Drepana falcataria*, *Selenia tetralunaris* and *Deuteronomos erosaria* on 23rd: *Crambus selasellus* on 25th: *Deuteronomos alniaria* on 29th: *Pterostoma*

palpina on 30th. Both *Deuteronomos fuscantaria* and *D. alniaria* were very early and have been abundant since. On 17th a single *Amphipyra tragopoginis* entered the trap, this is the first time I have known this species to be attracted by light (*Mormo maura* seems to have no use for light-traps either). *Pilema griseola* was first taken on 14th and has been by far the commonest moth of the season—stragglers are still arriving (early September).

August.—The first half of the month was excessively wet and cool, but later the nights became warmer. Sunshine was about average. Not a very exciting month, the only rarity being a single *Laphygma exigua* on 16th. Other first dates were *Amathes umbrosa* on 11th: *Cerura furcula* and *Catocola nupta* on 13th: *Hydraecia micacea* on 15th: *Herse convolvuli* on 24th: *Asphalia diluta*, *Trichiura crataegi*, *Triphaena comes* (the only one of the season), *Cosymbia punctaria* and *Ecliptopera silaceata* on 26th.

Other insects taken:—COLEOPTERA: *Prionycha ater*, *Ophonus ardosiacus*, *Oncomera femorata*, *Aphodius fossor* (what a pest!), *Ilybius fuliginosus*, *Rhagonycha fulva* (no business to be out at night), *Lagria hirta*, *Necrophorus humator*, *N. investigator*, *Necrodes littoralis*, *Melolontha melolontha*, *Hydrophilus piceus*, *Pseudophonus rufipes*, *Coccinella septempunctata*, *Dytiscus semisulcatus* and *Bradycellus sharpi*. HYMENOPTERA: *Vespa crabro* (far too commonly). HEMIPTERA: *Pentatoma rufipes*. ORTHOPTERA: *Pholidoptera griseoaptera* and *Meconema thalassina*. TRICHOPTERA: *Stenophylax permistus*, *S. vibex* and *Glyptotaelius pellucidus*.

Thanks are due to Mr. W. A. Wilson of Minehead for help in identification of some of the Coleoptera.—A. H. TURNER, Bickenhall, Somerset. 3.ix.52.

COLEOPTERA

ATHOUS CAMPYLOIDES NEWM. (ELATERIDAE) IN THE HASTINGS DISTRICT.—This very local crepuscular beetle (= *A. difformis* Lac.—see Tottenham, 1948, *Ent. mon. Mag.*, 84: 99) used to be taken in some numbers in various places near Hastings in the early part of the century. It may perhaps be of some interest to know that the species is still to be found in the district, for on the evening of July 9th last I took a male by sweeping along a grassy lane at Fairlight. (The female is very seldom seen, but can be obtained by rearing from the larva, and possibly by night sweeping.) The recorded British Localities are concentrated on and near the coasts of East Sussex and Kent, those outside this area being few and scattered. On the occurrence of this insect on the north-east fringe of London (in Herts.) see Allen, 1945, *Ent. mon. Mag.*, 81: 11. The species persists into early August.—A. A. ALLEN.

APION DIFFICILE HBST. (CURCULIONIDAE) IN SURREY AND HANTS.—Of this very local weevil (till lately known to British coleopterists under its synonym *A. kiesenwetteri* Desbr.) I have seen no published record for either of the above counties. At the beginning of August, 1947, while Dr. A. M. Easton and I were working for *Meligethes bidentatus* Bris. near Hinton Admiral, S. Hants., I swept a few examples of the *Apion* from its foodplant, *Genista tinctoria*. On another occasion, at Effing-

ham, Surrey, Dr. Easton pointed out to me a ploughed field where the plant and the beetle had abounded, until both were exterminated by the 'advance of civilization'. Finally, in early July of this year I swept about ten specimens of the weevil from *G. tinctoria* growing at the edge of the golf-course on the Fairlight cliffs, near Hastings; the plant was present over a considerable area, extending well along the cliffs, but *A. difficile* was only to be found in one very limited spot. It is already on record for E. Sussex, having occurred at Ditchling to the late Messrs. Donisthorpe and Dollman. Chattenden, Kent (where it was first taken in Britain in 1872 but mistaken for *A. fuscirostre* F.) and Sandown, Isle of Wight (whence it was first detected as British on a specimen taken in 1906)—see Champion, 1907, *Ent. mon. Mag.*, 43: 52-3—complete the few records of the species that have come to my notice; but there have doubtless been others.—A. A. ALLEN, The Tiled House, 63 Blackheath Park, London, S.E.3. 25.viii.52.

DIPTERA

Notes on the Asilidae (Robber Flies)

By L. PARMENTER.

(Continued from page 266.)

LEGS USED IN HUNTING.

We have already briefly mentioned the bristles on the legs. *Leptogaster* and *Dioctria* have few bristles to lend support to the claws in the attack. The species of *Laphria* and *Asilinae* have many strong bristles and hairs, enabling them to grip their prey more easily. Thus, we would expect from the latter group, they are able to deal with bulkier and highly chitinated insects. These prove to be the prey in these cases.

VISION.

Attention must now be given to their power of vision, which one would expect to be exceptional in a creature living by hunting. The Asilidae are provided with two large eyes of many facets and three small ocelli as in most of the Diptera. The function of the ocelli is not understood. Many theories have been suggested but the most reasonable suggest that they are adapted for poor light without having any power to create an image.

The compound eye is divided into two areas, one having larger facets than the other and forming the central portion of the eye. This area of large facets is the important part and an increase of this area, which is found in species of *Laphria*, is correlated with recognition at longer range.

Several species love to sit on leaves or on bracken in the sun and dart at passing insects. Whilst watching them one finds that they will also fly at floating seeds of thistles and fragments of leaves twirling by. On close approach to these objects they will brake and weave to one side, returning to base or another landing ground. The same action takes place when they launch themselves at a powerful insect such as a common wasp, unless the Asilid happens to be the courageous *Asilus crabroniformis*, which will kill a wasp and enjoy the meal provided. Thus

one gathers that they can observe rough shapes at their longest range of sight, but cannot identify, except at very short range of a few inches. This is further suggested by their action in alighting on dip-terists (as has happened to me several times). They are welcome visitors incidentally, for, like the larger dragonflies, they will come and attack the swarms of *Hydrotaea irritans* that circle your perspiring brow as you stalk in the sunshine. Their darts vary in length, from under 25 cm. up to 10 yards, in *Laphria gilva* and *Laphria flava*. The prey is always, as far as I am aware, captured from behind.

FEEDING HABITS OF THE SPECIES.

Leptogaster cylindrica haunts tall grass and flowers, patrolling the rim of the tufts of grass and plants with legs held at the ready—fore legs extended in front and hind pair hanging ready to land; abdomen trailing parallel to the ground. It has a graceful floating flight and takes sitting or drifting prey, swooping down on some small aphid, *Chironomid* or *Simulium*. It is not a very efficient hunter, with poor vision, almost unarmed legs, and is generally ill adapted to its task, as compared with the more robust Asilids. It will suck its prey, hanging by one leg and holding the victim with its other five.

Leptogaster guttiventris is uncommon and I have not seen it make a capture.

Isopogon brevirostris of the hills, with its thin wire-like hind tibiae in the male, seems a weak creature. Braconids form its recorded prey. More observation is needed to show that its near relation to *Dioctria* includes a similar attraction to Hymenoptera as prey.

Lasiopogon cinctus I have only seen in action at Oxshott where I saw it sucking a lovely blue *Enallagma cyathigerum*, a dragonfly several times its own length. Others have recorded it mostly with small Diptera as prey, although a few long flies such as *Nephrotoma* have been taken.

The *Dioctria* species somewhat resemble Hymenoptera and have been taken in error more than once by hymenopterists when collecting. Their prey includes Diptera but is formed chiefly of Hymenoptera, mostly Ichneumonidae. They hunt amongst tall grass and plants, weaving their way in out, seeking the ichneumons, which are behaving in the same way, as they, in their turn, seek caterpillars. Of the Diptera taken, a fair proportion is of species like *Syrirta pipiens*, *Paralleloma albipes*, *Chloromyia formosa* and *Bibionidae*; species that are somewhat like Hymenoptera and not fast in flight. The prey is medium to small, and not larger than the captor. *Atricapilla* has taken the beetle *Phalacrus coruscus*; *oelandica* the sawflies *Tenthredo ferruginea* and *Tenthredopsis litterata*; *baumhaueri* the hover fly *Syrphus corollae* [*S. balteatus* taken by *N. cyanurus* and *S. vitripennis* by *M. atricapillus*]. *D. rufipes* amongst its captures includes the sawflies:—*Melisandra cinereipes*, *Selandria serva*, *Euura atra*, *Tenthredopsis nassata*, *Amastegia glabrata* and *Dineura stilata*. Its Diptera prey include *Musca domestica* also recorded as taken by *Philonicus albiceps* and *Machimus atricapillus*.

Dr. Hobby was once able to study a population of *D. rufipes* when he captured 88 specimens with prey between 4th and 17th June 1931 in University Parks, Oxford. Of these only in one instance had the prey been recorded previously for this species. This shows the wealth

of original study still open to entomologists. Amongst his series of prey he lists 8 females of *Pycnocyrtus peregrinator* (an Ichneumonid) and 5 males but only one female of *Dilophus femoratus*. The fact that the prey is confined almost to one sex in both cases is, I believe, due to the flight habits of the species concerned. I have found similar instances when observing the feeding habits of the Common Dung Fly, *Scatophaga stercoraria*.

In *Dilophus*, as they emerge, the males rise and float, awaiting the virgin females.

Laphria marginata. My experience with this woodland species has been unfortunate. They fly fast and far, and the only captures I have seen were dashed away out of my reach. The few victims on record include beetles such as *Phyllobius argentatus* and *Magdalis ruficornis*; ants; a plant bug, and Muscidae. In Sweden, *Laphria gilva* has preyed chiefly on ants and beetles. The Scottish *Laphria flava*'s victims include the sawfly—*Melisandra morio*, the beetles *Coccinella septempunctata* and *Dalopius marginatus*, and among the Diptera the big Drone fly *Eristalis tenax* which has also been captured by *Asilus crabroniformis*.

The latter, the most handsome and strongest of the British Asilidae, has also taken the model of *Eristalis tenax*, namely the common hive bee. *Crabroniformis* is a resident of the London area. It occurs on the downs in Kent and Surrey. In Cornwall I have found it on the rabbit-nibbled turf of the fixed sand dunes as well as on the hillsides. Several people have found it to have killed other Asilids including its own species. Besides the hive bee it has taken that handsome red bee *Andrena fulva*, and common wasps—*Vespa germanica*. I have seen more than one *Chorthippus bicolor* fall victim to it and other grasshoppers killed include *C. parallelus*, *Myrmeleotettix maculatus* and *Omocestus viridulus*. The Chalkhill Blue is abundant in the same haunts in some localities and has occurred in the dietary. Among the beetles caught in flight are included such powerful species as *Cantharis rustica*, itself a predator, *Philonthus politus*, *Necrophora vespillo*, *Aphodius rufipes*, *Sermylassa halensis*, evidence of its strength and ability. Chiefly its prey consists of the bulkier diptera such as *Sarcophaga carnaria*, *S. subvicina*, *Echinomyia fera*, *Mesembrina meridiana*, *Sericomyia borealis*, *Calliphora erythrocephala* and *Vollucella pellucens*. Its numbers fluctuate considerably from year to year and these fluctuations might repay study. Possibly they are controlled by the effect the weather has on the larvae, or even pupae, but it may be that the species is subject to rhythmic increases similar to those of animals studied by Elton.

Philonicus albiceps is a hunter of the coastal sand dunes that I have visited in Cornwall and Norfolk. It is shy of human beings, with apparent good vision. It rests on blown sand in the sun, near to tufts of marram, and rises at passing flies, mostly the commoner *Calliphoridae* and *Muscidae* that are the scavengers of the dunes; but like *Asilus crabroniformis* and *Neoitamus cyanurus*, it has fed on *Tipula paludosa*, the Daddy long legs so abundant in autumn.

Dysmachus trigonus is another London Asilid. It can be found nearer in than *crabroniformis* and I know it in one location on Mitcham Common. Amongst other places we found it in Norfolk, hunting on the coastal dunes, in areas of planted marram, where it had cannibalised

tic habits. Generally, robust flies form its diet—species like *Calliphora*, *Sarcophaga*, and *Alophora hemiptera*. But, besides taking the moths *Tortrix viridana* and *Crambus pratellus* it has been found with the wasps *Pompilus plumbeus* and *Odynerus laevipes* as prey.

Eutolmus rufibarbis I do not know. It has occurred in Kent, where it was observed killing a *Thereva* near Farningham.

Machimus atricapillus is probably the most abundant Asilid and occurs over a large part of the London Area. Its food is chiefly Diptera, according to Dr. Hobby's collected records, but Hemiptera, Coleoptera, Hymenoptera and a few Lepidoptera have been taken, such as the Small Heath, and, among the beetles, *Aphodius contaminatus*, *Phyllobius virideaceris* and *Phyllobius argentatus*. For its killing of *Stomoxys calcitrans* most of us will be pleased, for *Stomoxys* is a biter related to the Tsetse fly.

In August 1941, I had the good fortune to find the species common along a lane edging a wood in Cornwall. 41 specimens were captured with prey, almost all dipterous. My notes (which were printed in the *Proceedings* of the Royal Entomological Society in September 1942) specify 25 species of Diptera, one of Coleoptera, 4 of Hemiptera and 2 of Hymenoptera.

Epitriptus cingulatus feeds mostly on smaller flies than those taken by *Machimus* but has been known to capture *Calliphora erythrocephala*.

Epitriptus cowinii is the latest addition to the British list and incidentally is new to science. It appears to be confined to the Isle of Man, where it brought fame to itself by capturing a moth also new to the British List.

Neotamus cyanurus haunts the bracken beneath the trees edging woods about London and elsewhere. At Limpsfield in 1949 it gave a fine display: I even had individuals alighting on my clothes, possibly attracted by the flies we disturbed from the bracken. It has taken the lacewing *Chrysopa ventralis* and one of the *Coenagrion* dragonflies, also a few beetles such as *Phyllobius pyri* and *Dalopius marginatus*, and several Lepidoptera. I have found it killing *Tortrix viridana* at Byfleet, Surrey. Its dipterous prey include several families, mostly large flies, especially Crane flies of the genera *Tipula* and *Nephrotoma*.

These brief remarks of the prey indicate the wide selection made by the captors concerned. Many more records must be amassed before a firm basis is obtained for the evaluation of the factors governing the choice of prey.

Certain factors are obvious—namely that the ecological association in which the species lives has a notable control. A list of prey alone would indicate the different areas inhabited by *Philonicus* and by *Neotamus* for instance. Another factor is the method of hunting, well evidenced in a contrast of the methods used by *Leptogaster* and *Machimus*.

The abundant species in the habitat generally fall victim to the predator but, as has been shown, this may depend on flight habits.

There is definitely preferential selection based on several factors—size, method of capture, and habitat, which suggests the family to be admirably suited for the study of the theory of natural selection and of mimicry.

The capture of so many 'protected' species is most important and suggests that the distastefulness and warning coloration theories do not apply to Asilid attacks and therefore the *Asilidae* fill an important niche in the associations of insects.

ECONOMIC IMPORTANCE.

Their numbers rarely assume the size to make them of economic importance although Lundbeck has recorded their great help in dealing with an outbreak of bark-boring beetles in the Danish forests. A plague of these beetles brought an apparent increase in the number of *Laphria*.

CONCLUSION.

An attempt has been made in this paper to review the knowledge of the habits of the *Asilidae* known in Britain, covering all stages and endeavouring to indicate from time to time the vast field of study that remains. Britain has made some valuable contributions to this study but we have much to do. I have not come across one instance of any breeding or even description of the immature stages by one of our countrymen.

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VOLUCELLA INANIS L. (SYRPHIDAE) TWICE FOUND INDOORS AT BLACKHEATH.—One day in September, above five years ago, I was summoned to remove a bee that had taken up residence on the ceiling of an upstairs bedroom of this house. The 'bee' turned out to be a male *Volucella inanis* L. To-day I found a second specimen (female) dead on a window-ledge of the top landing, with a mature larva of the Dermestid beetle *Anthrenus verbasci* L. (= *varius* F.)—a household pest with us—

lurking suspiciously close to it. I am at a loss to explain the indoor source of attraction to this rather scarce fly; our commoner Volucellae seem to have no disposition to enter houses, yet the above two *V. inanis* are the only examples of their species I have so far met with. It is, I think, mostly recorded as associated with hornets in the larval state, but I have never seen a hornet in this district and conclude that here it breeds in wasps' nests (like its larger ally *V. zonaria* Poda, recently noted from Blackheath and neighbouring localities).—A. A. ALLEN, The Tiled House, 63 Blackheath Park, London, S.E.3. 25.viii.52.

Fifty Years Ago

(From *The Entomologist's Record* of 1902.)

LEPIDOPTERA IN PERTHSHIRE.—I take the opportunity of reporting the taking of the larvae of *Cirrhoedia xerampelina* here, the first week in April, at dusk, crawling up from the burnside, at the roots of old stunted ash-trees, but only at those trees that had very prominent flower-buds. I do not think it has been taken here by anybody for several years till now. I have also taken several larvae of *Drymonia chaonia* this week, about half fed, at oak. I find the best way to get this larva is to stand beneath the tree and look up, and it can then be seen resting along the midrib of the leaf, and upon the same tree that probably you have been giving a sound thrashing; a more tenacious larva I know not. *Anticlea sinuata* can now be seen ovipositing where there is an abundance of *Galium verum*, generally upon dry southern slopes, and is often mistaken for *Melanippe montanata* at first sight. *Thera simulata* larvae are also full-fed, I beat some from juniper last week.—E. ROGERS BUSH. 30.vii.1902.

PARTIAL SECOND BROOD OF CUPIDO MINIMA IN BRITAIN.—On the 11th inst. I took a fresh male *Cupido minima*, at rest, on the South Downs. I believe specimens of this, the second brood, are rarely met with in Britain.* Some of the other insects taken or observed in the same locality on that day were *Melanargia galathea* (rather common), *Lithosia complana* (one), and several *Eremobia ochroleuca* settled on the flower-heads of knapweed.—J. F. BIRD. 15.viii.1902.

*It was common enough in Cambridgeshire in 1950.—P.B.M.A.

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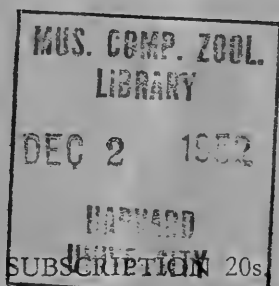
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EDITED BY
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Aberrations of *Arctia villica* Linnaeus

By E. A. COCKAYNE, D.M., F.R.C.P.

PLATE XII.

Ab. ursula Schultz. *Ent. Z.*, 1904, **18**, 111.

This has the cream coloured spots along the costa and inner margin more or less confluent. The author cites Oberthür, *Et. d'Ent.*, 1896, 20, figs. 263-266, 282, and 284.

radiata Spuler. *Schmett. Eur.*, 1906, **2**, 135.

confluentissima Oberthür. *Lép. Comp.*, 1911, **5** (1), 136; 1912, **6**, Pl. 110, fig. 993, ♀; *Et. d'Ent.*, 1896, **20**, Pl. 17, figs. 275-282, ♂.

It will be noticed that Oberthür cites some of the same figures as Schultz. *Radiata* and *confluentissima* are synonyms of *ursula*. I give figures of a male, Fig. 1, and three females, Figs. 2, 3, 4.

Ab. bruyanti Dufour. *Bull. Soc. H.n. Auvergne*, 1922, **1**, 29, text fig.

Fig. 7 from Harwich represents a moth very like the type figured by Dufour, but in this spots 6 and 7, those nearest to the termen, are not quite united. The one figured by Barrett, Pl. 73, fig. 1b, is more like Dufour's type.

Ab. kettlewelli ab. nov.

Both fore and hindwings are diaphanous owing to deficiency of scales, but the remaining scales are normal in structure. On the forewing there is a line of black scales along the costa and a large part of the inner margin; the discoidal mark is distinct; a line of black scales runs along the median nervure except the part near the base and another runs along nervure 2 to a point a little beyond the discoidal mark, and the triangular space between is filled with black scales; the apex is black there is a triangular black patch on the termen at nervure 4, and another near the anal angle, and a narrow band along the termen and the fringe are black between the first mentioned black marks. On the hindwing there is a narrow black mark at the apex, another small triangular one with its apex on nervure 4, and a black band from the costa to a point just beyond nervure 5; there are a few black scales at the discocellular nervure or none at all; the rest of the wing is orange. Much of the dorsum of the abdomen is scaleless, but there appear to be black dots on some somites.

Type ♂: Cranleigh, vi.1948, bred by Dr. H. B. D. Kettlewell. The parents were brother and sister, both *ab. ursula* (fig. 8).

Allotype ♀: Same data (fig. 10). Paratypes ♂, ♀: Same data (figs. 9, 11).

From the figures it will be seen that the shape of the black markings left by the confluence of cream coloured spots differs considerably from those of *ab. ursula* and *ab. bruyanti*.

Ab. confluens Oberthür. (Fig. 5).

Ssp. *confluens* Romanoff was described by H. N. Romanoff, *Mém. sur les Lépidoptères*, 1884, 87, Pl. 4, fig. 9, as var. *confluens* and described as "alis anticis tertia et quarta confluentibus". The figure shows confluence of the three spots nearest to the termen, 4+7+8 on the schema of Schultz. He gives as localities Hadschiabad and Astrabad

in North Persia and Lenkoran, and says that typical *villica* has not been found in this area.

Oberthür, *Lép. Comp.*, 1911, 5 (1), 137, cites as an example of *ab. confluens* Romanoff the aberration figured in *Ét. d'Ent.*, 1896, 20, Pl. 17, fig. 283, ex Bellier coll., and says it is found in England and in the neighbourhood of Rennes. On p. 142 under *Arctia villica* ssp. *britannica* amongst other aberrations he places *ab. confluens* Romanoff. His *ab. confluens*, a sporadic aberration, is quite distinct from the subspecies named by Romanoff. Under the new International Rules of Nomenclature ssp. *britannica* *ab. confluens* Oberthür is the correct name and is valid because it is of infra-subspecific rank. Oberthür becomes the author unless someone else used the name *confluens* for the aberration between 1884 and 1911. Thus we have the confusing position of a ssp. *confluens* and an *ab. confluens* in the same species, and the doubt about the author of the latter, which is inevitable under the new Rules.

Fig. 12 shows a modification of *ab. confluens* or possibly a distinct entity. The two large spots near the termen, 4 and 7, are confluent; spot 7 is very large and almost square with its outer border nearly parallel with the termen; there is only a very narrow strip of black between it and the termen, and the fringe is black. In the great majority of specimens of *ab. confluens* spot 7 is roughly triangular, with the angle nearest the tornus often reaching the termen, in which case the fringe is cream coloured at the point of contact. There are only five examples of this modification in the Rothschild-Cockayne-Kettlewell collection, the only two with data being from Lancing and the Isle of Wight.

EXPLANATION OF PLATE XII.

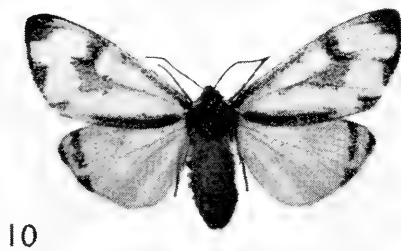
- Fig. 1. *Ab. ursula*, ♂.
 Figs. 2, 3, 4. *Ab. ursula*, ♀.
 Fig. 5. Trans. ad *ab. bruyanti*, ♂.
 Fig. 6. *Ab. confluens*, ♂.
 Fig. 7. *Ab. bruyanti*, ♂.
 Fig. 8. *Ab. kettlewelli*, ♂. Type.
 Fig. 9. *Ab. kettlewelli*, ♂. Paratype.
 Fig. 10. *Ab. kettlewelli*, ♀. Allotype.
 Fig. 11. *Ab. kettlewelli*, ♀. Paratype.
 Fig. 12. *Ab. confluens*, ♀ (modification).

The Genetics of *Arctia villica* Linnaeus *ab. ursula* Schultz and *ab. kettlewelli* Cockayne

By E. A. COCKAYNE, D.M., F.R.C.P.

Some years ago Dr. Bernard Kettlewell found that larvae of *Arctia villica* were not uncommon at Cranleigh, feeding on foxglove in the hedgerows, and by putting bred females in his perforated zinc assembling cages he attracted large numbers of males even in his own garden. Amongst them was a small percentage of *ab. ursula* Schultz, the form with confluence of the spots nearest to the base forming two longitudinal streaks on the forewing. The degree of confluence varied considerably.

In 1944 he paired a male *ursula* with well-marked confluence and a normal female bred from a wild Cranleigh larva (brood 3/44). In 1945



he obtained two pairings of *ursula* ♂ × normal ♀ (2/3/44 and 5/3/44) and a pairing of *ursula* ♂ × *ursula* ♀, both with slight confluence of spots (1/3/44). No moths were bred from these three broods owing to virus infection, which killed large numbers of his larvae in this and in the following years. A pairing was also obtained between a male with the basal and first costal spot (1 + 2) united by a slender line of cream-coloured scales on the right wing only and a normal female (4/3/44), and this was handed over to Dr. H. B. Williams. In 1946 amongst those bred by Dr. Williams was a female *ursula* and Dr. Kettlewell paired it with a male *ursula* which he had assembled to his trap (11/46). He handed over part of 11/46 to me and kept the rest himself. In 1947 he paired a male *ursula* with well-marked confluence of spots and a female *ursula*, brother and sister from brood 11/46 (2/47). He also paired a male *ursula* from 11/46 with a female *wardi* (1/47) and a less good male *ursula* from 11/46 with another female *wardi* (3/47). In 1948 he obtained two pairings between males and females from 1/47 or 3/47 (2/48 and 1/3/47). These were both heterozygous for *wardi*, but there is no written evidence that either of the male parents was *ursula*. Dr. Kettlewell thinks that both parents of both broods were normal, because there is no mention of confluent spots in his note book, but a year previously he told me that he felt sure the male parent of 2/48 was *ursula*. Since the parents were not kept we shall never know.

Very few female *ursula* are seen in collections, and apart from those bred in this experiment there are only three in the Rothschild-Cockayne-Kettlewell collection, and as a rule females show the less extreme degrees of confluence. There are, however, large numbers of male *ursula*. Part of this discrepancy may be explained by the fact that males are more readily disturbed by day, and those taken at light or by assembling are all males. On the other hand most of the *villica* in collections are bred from larvae collected in the spring and if *ursula* were not almost confined to the male sex one would expect to find equal numbers of male and female *ursula* in series bred from wild larvae. The rarity of females suggests that the inheritance is not simple and Dr. Kettlewell's results bear this out.

Dr. Kettlewell told me some time ago that *ursula* was dominant and in the interpretation of his results I have accepted this as a working hypothesis. We have no record of the actual figures resulting from a pairing between a well-marked male *ursula* and a normal female, but Dr. Kettlewell assures me that in brood 3/44 male *ursula* were fewer in number than normal males and it is quite certain that all the females were normal. There can be no doubt that the male parent of 4/3/44 was *ursula* genetically, although only a thin line of scales united spots 1 and 2 on the right forewing and the left side was normal. The female parent was normal. The result of this brood is given below.

				normal		<i>ursula</i>	
♂		♀					
normal	<i>ursula</i>	normal	<i>ursula</i>	♂	♀	♂	♀
2	1	10	3	2	10	1	3
				12		4	

The number of males is too small to be worthy of consideration, but there is a great deficiency of female *ursula*, 10 normal : 3 *ursula*, instead of 1 : 1 expected if *ursula* is dominant.

There are two broods of which both parents were *ursula* and the detailed results are given below.

Brood 11/46		♂		♀		normal		<i>ursula</i>	
<i>ursula</i> ♂ (wild)		normal <i>ursula</i>		normal <i>ursula</i>		♂	♀	♂	♀
×									
<i>ursula</i> ♀ ex 4/3/44		6	11	12	5	6	12	11	5
						18		16	

Both parents were almost certainly heterozygous *ursula* and the expectation is 1 normal : 3 *ursula*. Actually taking both males and females there were 18 normal : 16 *ursula*, which shows a great deficiency of *ursula*. Taking males only the ratio is 6 normal : 11 *ursula*, approximately 1 : 2. Taking females only the ratio is 12 normal : 5 *ursula*, approximately 2 : 1. Thus there is a deficiency of male *ursula*, but a far greater deficiency of female *ursula*.

Brood 2/47		♂		♀		normal		<i>ursula</i>		diaphanous	
♂ <i>ursula</i> ex 11/46		normal <i>ursula</i> diaphanous		normal <i>ursula</i> diaphanous		♂	♀	♂	♀	♂	♀
×											
♀ <i>ursula</i> ex 11/46		3	3	2	7	1	2	3	1	2	2
		10		4		4					

In this brood there were 8 males and 10 females, a difference that is not significant. The expectation is 1 normal : 3 *ursula*. Actually there were 4 diaphanous moths with a much greater reduction of black markings than *ursula*, but less reduction than *ab. unicolor* or *fereunicolor* Oberthür. At first Dr. Kettlewell thought they were homozygous *ursula*, but the ratio of 10 normal : 4 *ursula* : 4 diaphanous is very unlike the 1 : 2 : 1 ratio expected. The ratio of normal and *ursula* combined to diaphanous is 14 : 4 which is not far from the 3 : 1 ratio expected if the diaphanous form is an independent recessive. Dr. Kettlewell now agrees that this is the most probable explanation and the fact that the parents were brother and sister supports it, and the further fact that males and females were equal in number and very similar in pattern lends still further support. If we omit the diaphanous specimens and take the males only the ratio of normal to *ursula* is 3 : 3. Taking the females only the ratio is 7 : 1. There is a much greater deficiency of *ursula* in both sexes than in brood 11/46, but as in that brood there is a greater deficiency of female than of male *ursula*. In both broods, 11/46 and 2/47 there should have been homozygous *ursula* and a brood of 34 such as 11/46 was large enough to make it very surprising if none appeared. There were no *ursula* as confluent as some wild ones, which were in all probability heterozygotes, and in the males the ratio of *ursula* to normal was 2 : 1 instead of 3 : 1. In brood 2/47 the ratio was only 1 : 1, but the numbers are too small for much significance to be attached to them. We do not know what homozygous *ursula* looks like; it may not differ from heterozygous *ursula* or the homozygote may be lethal or almost lethal.

Let us now assume that *ursula* is recessive. Dr. Kettlewell was too busy to count the percentage of *ursula* amongst the wild males that came to his assembling cages at Cranleigh. At Dovercourt Mathew bred one *ursula* out of 200 larvae collected one year, but the frequency at Cranleigh may not be the same as at Dovercourt. We do not know the percentage of males that are genetically *ursula* and yet do not show the character, so that there is no means of estimating the percentage of heterozygotes in the general population. The female parent of brood 3/44, a normal *villica* bred from a wild larva, produced *ursula* amongst its offspring, and may have been a heterozygote. This is the only brood with one parent *ursula* and the other normal, which undoubtedly produced *ursula* amongst its offspring. Broods 1/47 and 3/47 were both pairings between male *ursula* from 11/46 of Cranleigh origin and female *wardi* with no basal confluence of spots of Dovercourt origin and were therefore quite unrelated, and no *ursula* appeared in the *wardi* stock. It is most unfortunate that Dr. Kettlewell has no record that either brood produced *ursula*. If they had one could with some confidence have dismissed the possibility that *ursula* is recessive. Broods 2/48 and 1/3/47 were from pairings between members of 1/47 or 3/47, and there is no record that any of the parents were *ursula*; they may have been normal as Dr. Kettlewell now thinks. The parents were not kept. All the larvae from 1/3/47 and most of those of 2/48 died of disease in the spring, but 1 ♂ *wardi* and 2 ♂ and 3 ♀ *villica*, all without any confluence of spots, were bred from 2/48. The numbers are too small to be of any value. One cannot be sure that apparently normal *villica* are genetically normal and the parents of brood 4/3/44 which I have regarded as a male *ursula* and a female *villica* may both have been *ursula*. Although no definite conclusions can be drawn from the experiments, they show that *ursula* may be dominant and, if so, that in the heterozygous state it has imperfect penetrance in the male and very poor penetrance in the female, and that it may possibly be lethal or nearly lethal in the homozygous state. If recessive, penetrance must be poor in the male and very poor in the female sex. Neither of these suggestions may be correct and *ursula* may not be determined by a single gene.

The diaphanous form, which I have named ab. *kettlewelli*, is probably a hitherto unrecorded recessive characterized by a much greater reduction of black markings than either *ursula* or *bruyanti* and by a great deficiency of scales in both sexes. These were the only diaphanous specimens in the brood and the only ones with this great reduction of black markings and for this reason I consider that both are the effect of one recessive gene.

Before Dr. Kettlewell began his breeding experiment nothing was known about the genetics of *ursula*. We have at least learnt that the problem is not a simple one and that it can only be solved by breeding on a larger scale and by keeping an accurate record of all parents and of the numbers and appearance of the males and females of every brood.

'NEW VARIETIES OF BRITISH LEPIDOPTERA'.—I much regret that by an oversight I omitted to thank Mr. W. H. T. TAMS for the photograph of the varieties in my collection depicted in the last issue (Plate XI).—AUSTIN RICHARDSON, Beaudesert Park, Minchinhampton. 3.x.52.

The problem of *Lasiocampa quercus* Linnaeus ab. *olivaceo-fasciata* Cockerell ab. *olivacea* Tutt and the melanic larva

By E. A. COCKAYNE, D.M., F.R.C.P.

Lasiocampa quercus ab. *olivaceo-fasciata* Cockerell (*Entomologist*, 1900, **33**, 3) with a reference to *Entomologist*, 1889, **11**, 103, and ab. *olivacea* Tutt (*Brit. Lep.*, 1902, **3**, 87) are both characterized by a green fascia instead of a tawny one, but I am not convinced that *olivacea* Tutt is not a synonym of Cockerell's aberration, which was founded on an olive banded variety shown by Porritt and Varley from Huddersfield, where all such moths are very dark. Since Cockerell only mentioned the green band, Tutt by the strict interpretation of the rules was justified in creating the name *olivacea* for those with the whole of the wings suffused with greenish. In any case no sharp line can be drawn between the two aberrations and both are probably determined by the same main gene. For the sake of brevity I am calling both of them the melanic form in this paper, though it would be more accurate to call them green banded.

In the English localities, where the melanic moths are found, and in some others there are melanic larvae, varying from dark brown to nearly black, and their cocoons are correspondingly dark. There was formerly a general belief that a melanic larva always produced a melanic moth and a normal larva a normal moth, and I said this without qualification in my Presidential address to the South London Entomological and Natural History Society in 1927-1928, stating that it was the only known case in which a gene for melanism affected both larva and imago. In all other cases genes for melanism in larva and imago are independent.

In this paper I intend to state the facts as far as I have been able to ascertain them and to offer a probable explanation of them. I will deal with the English localities first.

(1) W. V. Pearce (*Entomologist*, 1882, **15**, 254) under the heading "Lepidoptera near Portsmouth" published a note saying: "On the 28th July there hatched in my breeding cage a male var. *Lasiocampa quercus*. The colour was deep chocolate with the usual white spot in the centre of the forewings; the stripe across both pairs of which were narrow and of a deep green colour, and the fringe of the underwings is the same colour as the stripe. The larva was black, with the normal white markings; the cocoon was also black." I suspect that this moth's only claim to appear in the paragraph was that it was bred in Portsmouth and that the larva came from Lancashire or Cheshire.

(2) W. Bell (*Ent. Record*, 1909, **21**, 45) obtained larvae on Wallasey sandhills on 28th March 1907, five of which were very dark, almost black. The dark larvae were kept separate from the light and pupated in June 1907, their cocoons being noticeably darker than those of the light larvae. A male, perfectly dark olive, emerged 5th July 1908 and a female also dark olive on 9th July. They paired at noon 9th July and on 11th July the female laid 117 eggs. The larvae moulted three times and then hibernated. All were very dark. Two of the larvae found on the sandhills were parasitized and the third died. All the light

larvae produced normal moths. Presumably the melanic larvae which were hibernating died, because no further note was written. The fact that all the young larvae were melanic and were the offspring of two melanic moths, of which the larvae were also melanic, suggests that it is recessive.

(3) C. B. Williams (*Proc. S. Lond. Ent. and N.H. Soc.*, 1916-1917, 132) showed a pair of the dark chocolate ab. *olivacea* Tutt of *Lasiocampa quercus* from the Cheshire coast sandhills with the dark cocoon from which one of the above was bred and a very dark coloured larva (preserved) similar to those which produced the melanic forms.

(4) E. B. Cowell (*Raven Ent. and N.H. Soc. Report*, 1951, 21) exhibited a *Lasiocampa quercus* f. *callunae* ab. *olivacea-fasciata*. In a personal letter dated 19.v.1952 he says the specimen was bred from a melanic larva found at Freshfield near Formby on 16th April 1950 feeding on bramble. It pupated 14th June 1950.

(5) Arnold W. Hughes (*Proc. S. Lond. Ent. and N.H. Soc.*, 1931-1932, 47) exhibited a series of *Lasiocampa quercus* var. *callunae*. The specimens were bred in recent years from Wallasey larvae. "It was at first thought that olive forms were produced by black larvae with very dark brown hairs. Further investigation showed that every black larva did not produce an olive coloured moth and on the contrary an odd typical larva collected by a schoolboy did produce the variety *olivaceo-fasciata*. The only conclusion reached was that the larvae vary as well as the imagines, and if black larvae are found amongst typical ones there is a possibility or even a probability that larvae gathered from that brood (either typical or melanic) will produce one or more varieties of the moth. Only 37 moths were bred. Of these 6 were olive forms and 2 others might be described as intermediates. The larvae were wild. No bred imagines were paired for experimental purposes. On one occasion 18 selected black larvae were sleeved with mosquito netting on a willow. The cocoons and pupae were ravaged in the sleeve by a tiny parasitic fly and not one survived." In a recent letter Mr. Hughes says that only one melanic larva produced a normal moth and admits that, as the melanic larvae were not separated from the normal ones, a mistake may have occurred. He also says that it would be unwise to place implicit confidence in the schoolboy's statement that a normal larva produced a melanic moth.

(6) Mr. Gordon Smith in July 1952 received a female ab. *olivaceo-fasciata*, bred by a friend at Birkenhead, and attracted three males. He obtained a pairing and as a result has 130 larvae all of which are normal.

I have only one record from Wales. In 1947 Mr. S. Gordon Smith caught one ab. *olivaceo-fasciata* among 636 males attracted to a female in the Welsh Hills.

It is disappointing to have found so little published confirmation of the belief of the local collectors that all melanic larvae produce melanic moths. Enough, however, has been published to show that this is usually the case. The only two exceptions fail to carry complete conviction. In Yorkshire the melanic moth is much scarcer and I can find no published account of one having been bred from a melanic larva. Mr. F. Hewson of Shipley informed me that he had bred four or five melanic moths with a white central spot, but with a darker ground than

any he had seen from other localities and he felt sure that each was bred from a black larva, but he had made no note of this at the time. The larvae were found over a period of years on the moors near Bradford.

In Scotland Mr. Austin Richardson found a larva at Aviemore, abnormally dark but not black; it hibernated as a larva and produced a dark male with a green band about 1945. Mr. F. W. Byers (*Raven Ent. and Nat. Hist. Report*, 1951, Pl. fig. 5) gives a figure of a green banded male from Aviemore and in a letter to me said that the larva that produced it was quite normal.

In Caithness Mr. Swanson of Keith Village supplied L. W. Newman and others with cocoons, from which large numbers of green banded moths were bred, some rather light in colour, some darker, and a small proportion as dark as the Lancashire and Cheshire ones. His larvae were collected in many different years, and recently he has kept cocoons and bred melanic moths himself. He tells me that all the larvae are normal in colour. Thus in Caithness ab. *olivaceo-fasciata* and ab. *olivacea* exist, but there are no melanic larvae.

In Denmark and in Holland there are restricted localities, where ab. *olivaceo-fasciata* occurs, but there are no melanic larvae. Gjaldbaek (*De Danske Spindere*. Skat Hoffmeyer. 1948, 101) has shown that the aberration is probably recessive.

Frings (*Soc. Ent.*, 1905, 20, 89, 99) obtained larvae from a dealer, Paul Raatz of Brandenburg. They had blackish grey hairs and the cocoons were dirty blackish. The males bred from them were blackish violet-brown overlaid with sooty black, so that even the white spot on the forewing was blackish. The females were similar but not so dark. He named the form ab. *paradoxa*, but later in the year said this was a synonym of *olivaceo-fasciata* Cockerell, a name which he had overlooked. His specimens were darker than either Cockerell's aberration or ab. *olivacea* Tutt. Niepelt (*Int. Ent. Z.*, 1911, 5, 185) said that some six years ago he got 30 larvae from Paul Raatz from the estuary of the Havel, Brandenburg, E. Prussia. A third of them spun up the same year and the rest hibernated. Without exception they produced melanic moths. By sacrificing several pairs he bred the form for some years and all the larvae were black, the cocoons dark greyish brown, and the moths melanic like those bred by Frings. He gives a long description of larva, cocoon, and moth. He says that there is a constant local race of pure descent, native in the neighbourhood of Brandenburg on sandy ground in the Havel estuary and not yet found elsewhere on the Continent. He failed to cross it with normal *quercus* because he could not get the moths out at the same time.

It is clear that the dealer had a pure strain of black larvae all of which produced melanic green banded moths, but there is no account of the proportion of black larvae in the wild population in the Havel estuary. There is no evidence whatever that all the larvae there are black.

These are all the facts I have been able to collect. There are at least two possible explanations. The first is that there are two melanic forms of the moth resembling one another in every way except that one has a normal larva and the other a melanic larva, and their distribution is different; that in places where the melanic larva is found it

always produces a melanic moth and that any apparent exceptions are due to errors of observation. Theoretically this explanation is improbable because no genes are known which affect both the colour of the larva and the perfect insect with this possible exception. Although the records do not carry complete conviction there is no good reason for rejecting the two exceptions published by Arnold Hughes. The recent record from Aviemore must be accepted. If the story that a normal larva at Formby and another at Aviemore produced the melanic form of moth it might be due to the occasional occurrence of both the genetically different forms of moth in the same locality, but this would not explain the record of a melanic larva producing a normal moth. If this explanation is correct it must be assumed that Hughes made a mistake.

The following explanation seems to me to be much more probable. Melanism in the larva may be determined by one gene, probably recessive, and melanism in the moth by another gene, also probably recessive, but both genes may be very closely linked. In other words they may be situated in the same chromosome and so close together that crossing over very rarely takes place and separates them. Indeed they may be so close together that unless some chromosome error takes place such as inversion, *i.e.* the reversal in position of part of the chromosome in which one of the genes lies, their separation cannot take place.

This would explain why in certain localities melanic larvae almost invariably produce melanic moths, but does allow for rare exceptions to occur, either a melanic larva producing a normal moth or vice versa. It also explains why in some places such as Caithness, Denmark, and Holland, melanic moths occur but not melanic larvae. The mutation, which produces the melanic larva, has not occurred there or has occurred and died out.

Field Notes from Anatolia

IX. A Circular Tour

By MALCOLM BURR, D.Sc., F.R.E.S.

Plate XIII.

In the summer of 1951 there occurred in Istanbul an event of great interest to all zoologists and entomologists. It had rather a cumbersome title, the Zoographical Symposium of the Near and Middle East, and it lived up to its title. Its main object was to enable zoologists of different countries, with varied experience and knowledge but common interests, to meet and discuss the problems that concern them all, particularly the questions of geographical distribution that are of special interest in Turkey, where several different faunas meet and to a certain extent overlap. It was formed under the auspices of the Turkish Society of Natural and Physical Sciences, and organised by a committee of Istanbul zoologists. Thanks to material support granted by UNESCO, a remarkable programme was not only drawn up but carried into execution. The moving spirit was Professor Curt Kosswig, who has made such great contributions to our knowledge of the complex and fascinating zoology of Turkey, in particular of Anatolia.

There was no doubt about its international character. The Turin Museum was represented by Professor Tortonese; Irak by Dr. Alan

Mozley, a most erudite Scot; Beyrut by Mrs. Potter, an American lady who is Professor of Zoology in the Lebanon, with her husband Dr. Potter, a sociologist; there were no less than half a dozen Egyptian zoologists, mostly lecturers and professors, including Dr. Gohar Bey, who is Director of the Marine Biological Station at Ghardaga on the Red Sea, and half a dozen Israeli zoologists and entomologists: these were cemented by our local Istanbul talent, led by Prof. Kosswig with the members of his staff, not the least keen among whom were the ladies, and I joined in as an amateur member. The only language common to us all was English, in which the whole proceedings took place. Owing to the diversity of interests and outlook of the members, there was no monotony and eyes and ears were wide awake on all sides.

The party of us, numbering something like three dozen, started off for a grand tour through the wilds of Anatolia in a most comfortable motor-bus, which was paid for by UNESCO. We set out, full of hope and enthusiasm, on the morning of 29th July, the only flea in the ointment being in the form of an overcast sky.

We stopped at intervals in attractive spots, but owing to the clouds few insects were moving. In a likely-looking clearing in a forest the only butterfly I saw was an *Argynnis pandora* sailing majestically down a glade, but a keen lady, Dr. Melekmer Öktaş, found an earwig that I had been expecting but not yet recorded for Turkey, *Anisolabis annulipes* Luc. According to the books, it is said to be associated with streams, but here it was in a hill forest, under a nice damp stone. Presently I got a second one.

In a famished condition we reached Sapanja about four in the afternoon and all hurried down to the edge of the lake to see what we could find. This is the only place in Turkey where the frog, *Bombina orientalis*, and the Caspian herring are found. The Israeli ichthyologists and herpetologists were excited, but the weather was too overcast for much entomology. I got a few of the routine Mediterranean species, and noticed *Papilio podalirius*, *Colias croceus*, a few *Lycaenas*, all rather dingy, and one or two small dragonflies, mostly *Ischnura*. That night we were put up at a Village Institute at Arifiye, but the next morning incessant rains kept us prisoners for several hours. Our party was too enthusiastic to waste the time, so Dr. Bytinski-Salz gave us a lecture on the zoogeography of the *Tenebrionidae* of the eastern Mediterranean, with a faunistic analysis, which took the breath away of students of groups with restricted number of species.

The rain eased off about midday, so we started, and put in as a side line a visit to an extraordinary bridge built by the Emperor Justinian in the sixth century. It is an impressive affair in massive masonry, about 8 yards wide and 1200 ft. long, solid enough to-day to carry heavy traffic, but different from other bridges in the queer fact that there is no road leading to it or from it and the trickle of a drain that flows under it could be jumped by a child. It opens the door to fascinating questions of geology and history. The rain came on again, so it was impossible to take a photograph or do any collecting in a promising-looking spot. I must come back here some day.

The Israeli were mostly independent of weather, for whenever we passed a brook or a pond the bus stopped, Dr. Mendelssohn, Director of the Tel-Aviv Zoo, took off his shoes and socks, rolled up his breeches,

grabbed a thing like a shrimping net, and waded out into the water, coming back delighted with bottles full of aqueous creeping and jumping things. He was glad to get *Bombinator igneus* and the crested newt, *Molge cristatus*. The bird people were pleased to see the little egret, squacco heron, a buzzard, some shrikes, and at one spot a black stork. He is a handsome bird, but much rarer and wilder than his white brother.

Then we began to climb into the forest-clad mountains rich in *Rhododendron ponticum* and a characteristic foxglove, *Digitalis ferruginea*, with dirty yellow flowers, nothing like so fine a species as our familiar friend. The rain eased off, but everything was saturated, and we had to be contented with splendid scenery.

In the evening we came to Abant, a mountain lake surrounded by forest, in scenery recalling the Tirol. Here is certainly a place to come back to, where there must be interesting collecting. The bird life is European, with bullfinches and scarlet grosbeaks. The forests consist chiefly of fine beeches and hornbeams, and the black pine.

I was particularly keen on a day's collecting here, as once Professor Kosswig had brought back several females of an earwig that looked like a new species of the genus *Burriola*, new to Turkey, and all the next morning I wore myself out, with Kosswig's son to help, turning over stones, amid the mist and rain, on the identical spot; but the only insect we found was the common earwig.

The weather spoilt collecting, but one member of the party got an *Erebia*: Kosswig told me we were too late for *Parnassius*, of which two forms occur. The star turn of the day was a fish. I thought we were going to have a good supper when one of the Israeli walked by carrying half a dozen beautiful trout on a dish. But they were far too precious to eat. They were all silver in colour, with black muzzle and no spots, the local race, *Salmo trutta labrax*, a Sarmatian relic, which, thanks to Professor Kosswig's influence, is strictly protected.

The rain made one man happy, Prof. Haas, for the forest was swarming with enormous snails. To any but a conchologist it was a horrid sight, hundreds, if not thousands, of immense *Helix* fully stretched out all over the roads and paths, feeding on the Algae. Haas filled bags with the crawling, slimy things, and took back ample material for study in Jerusalem.

It was with the greatest difficulty that the great bus was able to make its way over the sodden mountain track out on to the main road. Once clear, we bowled along merrily enough, stopping to catch Batrachians and water insects at every brook and pond, but no entomology, except for Professor Theodor and Dr. Wahrman of Jerusalem, who found Diptera and Hymenoptera in considerable quantities, but obscure forms that call for special study.

We met a single crane out for a walk, a gigantic bird, like a man out for a stroll. Thanks to the rain and the stops, it was after two in the morning when we bowled into Ankara.

The next day we were all pretty tired and glad of a day off for a rest and social intercourse. Here, as one member put it, we met with magnificent specimens of *Hospitalitas turcica*!

The first item on the new part of the programme was a day's excursion to Tuz Gölü, the Great Salt Lake in the centre of the great arid

plateau of Anatolia, for long before reaching the capital we had left the forest zone behind and were now out on the open, treeless steppe.

We stopped a short time at Mogan Gölü, about 30 kms. out, a lake which is an ornithologist's and sportsman's paradise: of insects there were few, but I got the larger earwig, *Labidura riparia*, a cosmopolitan and most plastic species, under a stone, a larval mole cricket, and a few grasshoppers.

Over the steppe we saw few birds: a marsh harrier, a griffon vulture, an immense fellow, splendid in the air but repulsive on the ground, and we were delighted to see a family of great bustard; their white primaries are very conspicuous as they open their wings.

The lake itself is shrinking rapidly and for miles around the country consists of a salt plain with very sparse vegetation, chiefly *Artemisia*. Some animals are grazing there and every cowpat was a solid mass of dung beetles: the sun made them lively and on being disturbed they took to the wing in swarms. Theodor told me they are *Gymnopleurus mopsus*, with perhaps a second species. There were Tenebrionids scampering about, which Bytinski told me were probably a species of *Tentyria*.

Orthoptera were few but interesting. The common blue-winged *Oedipoda caerulescens* is here replaced by his heavier, eastern brother, *Oed. schochi*, and there is the salt-marsh *Sphingonotus theodori* Uv., which Professor Theodor had discovered round the Dead Sea in Palestine. It is curious that a species characteristic of salt plains should occur so widely scattered, from Sinai, Anatolia, and Iran to the frontier of Turkmenia. Were they evolved independently in each salt area? Or are their specific characters the physiological result of the salt? There were but few individuals, and of other Orthoptera very few: one *Calliptamus* with yellow tibiae. Theodor got a single *Platypleis intermedia*, and I found a single golden-winged *Oedipoda aurea*, a beautiful species. Of other insects a few Odonata like *Sympetrum*, a number of Asilid flies, and a handsome Mutillid. One or two *Chrysopa*, but not a sign of Lepidoptera.

On the way back, late in the evening, the fish enthusiasts were excited, for they found what they told me was a new species, probably a new genus, related to *Acanthorutilus*. A new species of fish is not an everyday event.

Back to Ankara late that night and off early next morning for the run across the steppe to Kayseri. After leaving the capital there is not a tree to be seen, except where there is a rare stream, the position of which is marked by a gallery-formation of poplars. We saw this clearly at Kirshehir, a little country town, as the name implies, which offers plenty of interest, but little that is entomological. Lunch there and off again and reached Kayseri, that ancient town, called Mansaka before the Romans vulgarised the name to Caesarea.

We kept stopping to collect by the wayside, a few minutes each time, wherever a brook ran under the road, and these indomitable Israeli zoologists jumped out to catch small vertebrates and other aqueous creatures. I was able to do a little collecting at each stop, but there was little moving before the evening. It is strange how few Tettigonids one sees. There is one wonderful spot, where the Kizil Irmak, the Red River, which is red, turns abruptly from the plain to cut a gorge



Above: Gorge of the Kizil Irmak, near
Kirsehir, Anatolia.
Below: Talas, on the flanks of Mt. Erciyas,
near Kayseri, Anatolia.



Above: Salt steppe near the Great Salt Lake,
Anatolia.
Below: At 2000 m. on Mt. Erciyas, near
Kayseri, Anatolia.

through a granite wall. Here, several years previously, on a patch of sand by the river side one April day, I had seen *Cicindela*, but they were too active for my fingers. I was anxious to know which species it was, but this time they were over. The only plant in the little gorge is *Pegamon harmali*, a salt-lover, and some lovely orange poppies, *Glaucium*. The typical birds are the blue rock thrush, Finch's chat, and the rock nuthatch, *Sitta neumayeri*. I felt there must be interesting insects with that association, but found little moving: the steppe mantid *Bolivaria* was there but I got nothing else.

At kilo 205, an unattractive spot, there was more life: the explanation is that it was getting on towards the evening and the Orthoptera and other insects were coming out of their dens. One Israelite friend got a *Bradyporus*, that obese, vegetarian Tettigonid that I used to find so abundant in Macedonia, but had not yet seen in Anatolia. In 1917-18 I wrote about them in the *Ent. Record*. They are entertaining creatures and I used to keep them as pets. The most interesting was a coal black *Calliptamus* that Bytinski gave me. This must have been caught at ecdysis by a bush fire. I have seen the phenomenon in the rich brown *Euprepocnemis* in Anatolia and in several species in Angola and Northern Rhodesia, but never before in *Calliptamus*.

We saw mammals. The susliks, *Citellus*, swarm on the steppe, where they form what Elton calls the basic industry, supplying abundant food for the larger birds of prey, foxes and other predators. They look like squirrels with thin tails, and are very inquisitive. They sit up on their haunches to watch the car go by, and when it comes so near as to appear dangerous, they pop down into their holes. And one Jerboa sped across the road in a flash, going faster on two legs than most animals can on four.

The only butterfly I saw was the indomitable *Colias croceus*. This arid steppe seems too much even for *P. cardui*.

Kayseri, an impressive old town, is dominated by the great volcano, Mt. Erciyas, the classical Argaeus. Its last eruption, in the Pliocene, made an immense impression on the whole countryside. The road was not good enough for our massive bus, so we hired local talent, which took us up to 2000 m., where there is an alpine rest house, just on the shoulder, above which the cone towers up almost another 2000 m. Here the air was keen, although it was the beginning of August, and for insects one had to work hard. Under stones I found plenty of *Anechura bipunctata*. This was interesting, as this alpine earwig occurs at high altitudes from the Pyrenees to Kashmir, affording what Huxley terms a cline, a gradual passage from one extreme form to another. Here no doubt we were at the southern edge of its distribution, but I was surprised that it was the normal European form. We were in the Taurus range, where other European creatures occur also near the boundary of their distribution, such as the red deer and brown bear. No doubt we should find the same thing with the insects. Theodor caught vast quantities of tiny Diptera by sweeping the grass and rushes by the side of a brook. He astonished me by his technique. He simply stuffed clusters of them in a big tube, to study at home. He told me that they held together in a tangled mass without breaking and could be relaxed and examined at comfort. He said there were probably a good deal more than a dozen species among them.

I am told Ercyas is very interesting botanically, and no doubt there must be an interesting insect fauna that would well repay study, but that calls for leisure which I do not possess. They say there are several endemic species of *Astragalus*, but it is clearly an impoverished steppe flora. The most striking plant was the tall, harsh, spiky *Morina persica*, which is definitely a member of the west Asiatic steppe flora. The local *Astragalus* is collected and used in the sweetmeat trade, and we saw numerous donkeys laden with the prickly stuff.

On the way down, towards evening, at a spot called Hisarcik, I found at last several species of Orthoptera, the eastern *Oedipoda schochi*, the Ethiopian *Oedaleus decorus*, the Asiatic *Sphingonotus nebulosus*, the Mediterranean *Oedipoda miniata* and a European *Chorthippus* like *Ch. dorsatus*.

The next day my friends left at dawn for Denizli, but I stayed to spend a day at Talas, on the slope on Erciyas, before returning home. Here there were more butterflies on the wing among the skimpy herbage on the dry hillside. I saw *Papilio podalirius*, a big *Satyrus* (? *briseis*), a chequered skipper, a meadow brown (? *M. jurtina*), *Lycaena phlaeas*, *Colias croceus*, *Pontia daplidice*.

Of Orthoptera there was no great wealth. *Calliptamus tenuicercis*, *Sphingonotus turcicus* and *Sph. nebulosus* and a single *Platycleis affinis*. It is strange how few, both species and individuals, there are of this genus in Turkey. On the Dalmatian coast, Brunner once told me he got eleven species in one afternoon, but that was of the genus in the wide sense. Still, one would expect more here. One can get more individuals at Folkestone in half an hour than I have been able to get in Turkey in years.

While waiting in the hotel garden at Kayseri for the car that was to give me a lift back to Ankara I was amused at watching a great *Xylocopa* visiting the *Antirrhinums*: his thorax was yellow with the pollen and he visited a scattered number of the flowers, seemingly very capricious, not stopping long at any one. *Argynnis pandora* flew over. In this country it often happens that the gardens have many more butterflies than the open country. One can usually be sure to see considerable numbers of this splendid fritillary and of *P. podalirius* decorating the gorgeous beds of *Zinnia* that are characteristic of the late summer and autumns in our gardens in Turkey.

The rest of the party met again in Istanbul a few days later, when Theodor gave me a *Nocarodes burri* which he had brought back alive from Uludagh. It was a big fat female that showed her resentment by defecating profusely at me and spewing out a jet black fluid like ink from her mouth and squirting it out from the dorsum as well. Bytinski told me that round Konya, which is on the north slope of the Taurus, with a steppe country round, he found only Mediterranean Lepidoptera. But he was not able to get outside the culture zone. At Bursa they found two species of hornet together, *Vespa crabro* and *V. orientalis*, but they cannot interbreed.

Before the party broke up we had an excursion to Shile, a village on the Black Sea coast, historically interesting as the spot where Xenophon landed with his Ten Thousand. Here there are some dunes, and the scenery reminded me of the Deal sand dunes, with a piece of Folkestone Warren (before it was spoilt), and a strip of sand on the

shore. There was very little wrack and I turned over what I could see, but it seemed lifeless. Haas, who walked along the shore some distance, said there was only an impoverished Mediterranean fauna, and I found the same with the Orthoptera, such species as *Oedipoda miniata*, *Paratettix meridionalis*, *Acrotylus insubricus*, *Oecanthus pellucens*, also *Acrotylus longipes*, an African species strangely characteristic of sandy estuaries, *Acrida turrita*, no doubt subsp. *bosphoricus*, and the Mantid *Ameles heldreichi*, with some familiar European forms, as *Omocestus rufipes*, *Chorthippus parallelus*, *Acrydium* cf. *bipunctatum*.

There were one or two butterflies, the irrepressible *P. cardui*, Satyrids like *S. semele* but very dark, *M. jurtina* or close ally, *Colias croceus* and a small *Melitaea*.

And that was the end of a fascinating, but most tantalising, run through a country of absorbing interest in company with enthusiastic specialists.

On *Lycaena dispar* Haworth

By S. G. CASTLE RUSSELL.

It appears to be generally assumed that the disappearance of this beautiful little butterfly was due to the over-collecting which occurred when it was first discovered in the fenlands of Cambridge, Huntingdon, Norfolk and Suffolk, and it certainly seems that this was the case in the well-known fens such as Whittlesea Mere, Holme Fen, etc. It may not be unreasonable to assume that the insect was formerly widespread over a large area in Fenland, places which collectors, owing to the difficulties of travelling in those days, may not have visited. Draining of the Fens, such as that carried out at Whittlesea Mere, would have undoubtedly affected the foodplant—great water-dock.

Mr. Edelsten has stated that unless constant attention is given to the welfare of the foodplant it would be crowded out and disappear under natural conditions, and this would mean the extinction of the colony of *batavus* that has been successfully established at Woodwalton Fen. This dying out of the great dock may have been one of the causes of the extinction of *dispar* in its old haunts. I remember in 1890 seeing some operations going on in the Monk's Wood area, in which large black oak trunks were being dug out of the water for making black oak furniture, which at the time was much in request. I have no idea how long this excavating had been going on, but it would not do the great dock much good.

In the same year whilst staying at the Station Inn near Holme station for a few days' collecting in Monk's Wood, one afternoon I spent cycling about the surrounding district in search of likely collecting-spots. Some five miles away I met with an area of fenland on one bank of which stood a small farmhouse or farm cottage in the garden of which a very old man was at work. He stopped to gaze at me, and thinking that I might be trespassing I went up to him and explained that I was looking for butterflies. He was quite ready for a chat, and very optimistically I asked if he had ever seen any butterflies with copper-coloured wings in the fen. After some thought he said that when he was a small boy he did see some butterflies with bright gold wings but had never seen them since. As those he saw might conceiv-

ably have been *L. phlaeas* which in later years when his eyesight had deteriorated he had failed to note, I did not attach more importance to his recollections; though it seems hardly likely that so small a butterfly as *L. phlaeas* would have left any impress on his memory. But what surprised me was his statement that he had never seen anyone collecting butterflies with a net before, either in the fen or elsewhere. This seemed curious, but some years after the first war when I was collecting with Sir Charles Langham in a wood adjoining the Long Valley, Aldershot, where some Army manoeuvres were going on, an elderly sergeant came up to us and demanded to know what we were doing. We meekly explained "butterfly catching." He declared that he had never heard of such a thing before and was of opinion that we were signalling to some far-away observers. He ordered us to stay where we were while he went to report to his officer. We watched him approach an officer on horseback and talk to him. It was very evident that the officer said something unpleasant to him, as he turned away and kept out of our sight for the rest of the time we were there. We were very much amused and so I expect was his officer, who would undoubtedly have heard of entomologists, as there were always one or two in the Garrison.

There can be little doubt about the greed of collectors in the days when *dispar* flew. They netted and killed every insect met with and the idea of preservation of species never entered their heads. Even in the 'nineties I knew two quite eminent entomologists who made it a rule to catch and kill every insect they came across.

On my first visit to Royston in 1912 I found only one collector at work and he told me that the *L. coridon* produced many varieties. His method was to fill his net with a large number of the butterflies, sit down and kill every insect by pinching it, then turn them out and examine each one. I could follow his tracks by the small heaps of dead insects he left behind. This system did not appeal to me at all and I contented myself with filling some forty boxes at a time and after examining the insects through the glass bottom let them go. Although I made several visits that year and the following one I never succeeded in catching an aberration; but my real object was to get a series of var. *semi-syngrapha* which had recently been discovered by two brothers named Keynes I think. In my time the Heath swarmed with collectors. The collector I met on my first visit claimed that he had examined 60,000 insects during a month's stay there, presumably all of which he killed. There were other collectors too who used to fill cyanide bottles chock full of insects and turn them out when dead for examination. This ugly custom has now I hope completely died out. At Royston in spite of the army of collectors (at one time 70 in number) the great abundance of the insects did not seem to be affected until the year 1927 when the species almost completely died out and in which year there were more collectors on the ground than insects. *L. coridon* has never since reached its old abundance. Very much the same thing occurred in the Chiltern Hills where great abundance was in evidence, and also in other places I know of.

Returning to *dispar*, I have a few numbers of Curtis's *British Entomology* as it was first issued in parts. On the back of each part is a list of the insects taken by J. C. Dale and Curtis during the year 1827.

Amongst these *L. dispar* is mentioned as occurring at Whittlesea Mere. No other locality is mentioned. Curtis also includes *Hipparchia cassiope* Fab. taken by himself and Dale on a mountain near Ambleside of which there were only 6 specimens previously known. There is no mention of *Cyaniris semiargus* in these lists.

Butterfly Hunting in Park Hills, Hampshire

By PAUL H. HOLLOWAY, F.R.E.S.

From my garden I can see, exactly a half-mile eastward, the tree-tops of Park Hills, oak woods with a liberal sprinkling of ash and horse-chestnut. The mile-long main ride through the woods is becoming so overgrown that progress is difficult and hardly worth attempting, unless *Pararge aegeria* is required, and in a clearing at the north end a small colony of *Argynnis euphrosyne* has annually become weaker as growth of brushwood developed. Recently this area has been cleared of unwanted undergrowth to encourage the advancement of saplings, and this year *euphrosyne* occurred in greater numbers, searching the vegetation for the flower-heads of bugle. This is the only clearing in the entire woods and it slopes down to the northern meadowland. The *euphrosyne* population is restricted to a radius of approximately 50 yards, and they always appear first at mid-May, disappearing within a month. In another large wood some two miles distant this species is quite common but not until the end of May and throughout June, while in the New Forest they are normally well out by the end of April. The reason for this geographical phenomenon has apparently yet to be discovered.

In the same clearing and on surrounding pasture land *Anthocharis cardamines* makes a regular appearance with a high percentage of ♂♂ only 33 millimetres in expanse (ab. *hesperidis*) and all intermediate sizes up to 40 millimetres, but rarely more.

In no New Forest ride is there a greater affluence of *Limenitis camilla* than around the borders of Park Hills, and this has been an especially favourable year for them. *Argynnis paphia* is also quite common and in some seasons the ab. *valezina* has been captured. *Melanargia galathea* is found along all borders and especially in the meadows to the north, meadows of cowslips patched here and there with wild iris; cattle graze on either side of Bow Lake, along the banks of which many ancient willows heave and creak under strong winds, the loose bark providing shelter for myriads of hibernating *Phaedon armoraciae* (Col.: Chrysomelidae). The removal of a piece of bark three inches square will sometimes reveal over a hundred specimens. A row of giant Scots pines once straggled in this direction, through the *euphrosyne* clearing; two years ago they were felled and *Panolis flammea* disappeared with them.

The spring-like radiance of early March brought forth an abundance of primroses, celandines and wood anemones, and the first marsh marigolds in the dank withy-bed. More Geometers appeared at each visit; the 'sawing' note of the great tit was persistent. On 17th March the first ♂ *Gonepteryx rhamni* made its welcome appearance. With what eagerness we anticipate this freshly-awakened insect each season! The snow of late March retarded emergences considerably; I had occasion to tend a snow-filled robin's nest and screen it from the easterly blast

with an old towel, ultimately having the satisfaction of seeing the fledglings take flight.

On 18th May our *euphrosyne* locality was flourishing; several *Vanessa cardui* were making short flights, looking ragged and travel-stained; the first Cardinal beetle, *Pyrochroa serraticornis*, flew over the buttercup field south of the woods.

We set forth on 29th June in intense heat under an azure, cloudless sky. *L. camilla* was abundant yet a week previously not one was seen, a few ♂♂ *A. paphia* glided from the higher branches, only to disappear after a brief inspection of the bordering brambles, and one ♀ *Thecla quercus* was secured. A stagnant pond created by a war-time bomb became the playground of several species of Odonata, while Longicorns (*Strangalia maculata*) frequented the flower-heads of hog-weed.

The grey morning of 6th July was sultry and stifling, following a dawn thunderstorm, but the butterflies were enjoying it; our first capture was a very fresh ab. *hutchinsoni* of *Polygonia c-album*, both sexes now of *A. paphia* were in evidence and an even greater profusion of *L. camilla*, although many had chipped wings. It was sheer delight to see such numbers, *M. galathea* leisurely flying through the grass and *Aphantopus hyperantus* so beautifully fresh. The first appearance of *Maniola tithonus* was recorded. The previous day I had experienced the sight of a Golden Oriole in Hampshire for the first time, flying southward, and I still possessed a feeling of great elation, the gorgeous brilliance of its plumage being fresh in my mind. Shortly after noon the darkening sky gave warning of more thunder, the insects became less active and green woodpeckers called. A week later the high, veering winds were detrimental to insect flight, *A. paphia* and *L. camilla* were showing signs of extreme wear and *T. quercus* was replacing them around the lower branches of oak. The newly-emerged Vanessids *Nymphalis io*, *Aglaia urticae* and *V. cardui* were making a colourful display.

All the year round Park Hills has something to offer those who love the picturesque. In the fall, the cold sun striking hues of startling diversity; the utter silence in the woods in winter, the scant foliage sheltering *Erannis defoliaria* and *E. aurantiaria*; the first *G. rhamni* in the brown glades of early spring. . . .

Current Notes

In *Entomologische Berichten* for October (14: 150-157) B. J. LEMPKE gives an account (with graphs for *Vanessa atalanta* and *Plusia gamma*) of the migrating Macrolepidoptera observed in Holland in 1951. It was a disappointing year generally and no species appeared in any considerable numbers. But 22 specimens of *Plusia confusa* Steph. (*gutta* Guen. see *Ent. Rec.*, 63: 253) were seen, and although the spring immigration of *Plusia gamma* L. was 'rather feeble' and the summer influx 'mediocre', there were strong local flights of this species at the beginning of September. Of *Caradrina ambigua* Schiff. 275 were recorded, and *Lithosia quadra* L. was more frequent than in the previous year, 107 being observed.

Hans Reisser (*Z. Wien Ent. Ges.*, 1951, 36: 133) has written an article on *Hyphantria cunea* Drury, the fall webworm moth, a pure

white Arctiid not unlike a small *Spilosoma urticae* Esp. This North American species, double brooded in the south and single brooded in the north, has a range extending from south Mexico into Canada. According to Suranyi it was detected in Hungary in 1940 and has now spread into part of Austria and Czechoslovakia and has become a most destructive pest. The larva feeds gregariously in a web, "eating a great variety of plants, and the pupa lives through the winter. No effective method of destroying it has been found. It is not known how it was introduced from America, but, on Suranyi's evidence, the American occupation of Austria is not responsible for the importation of this undesirable alien.

More habitats seem to be threatened. The Minister of Agriculture has authorised a "special high rate of grant of £10 an acre" for clearing, ploughing up and bringing into cultivation waste land which is encumbered by boulders, gorse bushes and thorn. "The cost of clearing varies greatly", says *The Times* of 18.viii.52, from which we quote, "but contractors who have heavy gear can quote a price on which the farmer will decide whether to proceed under this £10 an acre grant scheme." A hundred and fifty years ago the Board of Agriculture estimated that there were 7,888,977 acres of uncultivated land in England and Wales, a figure which Lord Ernle considered was "probably a gross underestimate". In 1775 Nathaniel Kent wrote that "within thirty miles of London there are not less than 200,000 acres of waste land". We wonder what the figures are to-day.

The reprint of the January issue is now ready. Will those subscribers for 1952 who have not yet received their copy for January please send a postcard to the Assistant Editor, at the address given on the back cover of the current issue?

Notes on Microlepidoptera

By H. C. HUGGINS.

Pyralis glaucinalis Linn. and *P. costalis* Fabr. may be bred from old birds' nests, particularly nests made of grass and moss, such as those of the hedge-sparrow, chaffinch, greenfinch, etc. The nests should be placed in a large flowerpot and exposed to all weathers, drainage of course being given. A number of Tineina, *lactella*, etc., will also be bred. Both the Pyralids may sometimes be obtained in numbers in June by scratching the sides of a two-year-old clover stack, but these are not always available and of course cannot be pulled to bits in the autumn and winter to search for larvae.

Emmelina monodactylus Linn. may often be found on fences in November and still more frequently if hedges containing convolvulus are examined after dark with a torch, when its pale colour makes it easy to see. The moth is a common one but it varies considerably, and as all plumes take time to set it is convenient to catch this second brood before hibernation when there is little else on the boards.

Chimabache phryganella Hübn. can usually be found in the woods in mid-November. It is best sought for on a sunny day, when the

brown-winged males fly briskly in the sunshine. The curious semi-apterous females, with pointed white and black wings, are not so easy to get but may be found fairly commonly crawling on oak-trunks in the afternoon.

Acrobasis tumidana Schiff. (*verrucella* Hübn.; *rubrotibiella* F.R.). There has been considerable discussion lately in the *Record* concerning Mr. Moncreaff of Portsmouth. Whilst I have no idea what happened to his collection, or even if he had a collection, one of his insects at any rate is still extant. This is the specimen of *tumidana* mentioned by Barrett (*Lep.Br. Is.*, x, p. 13) under the heading of *rubrotibiella* as taken many years ago in a salt-marsh near Portsmouth, Hants., by Mr. Henry Moncreaff. Vol. x of Barrett's work was published in 1905, and on Barrett's death this specimen passed to the late Eustace R. Banks and thence to South Kensington Museum, where I saw it in 1936.

Tumidana appears to be one of our mysteries: so far as I can ascertain this specimen and the five taken by A. B. Farn (one in 1873 and four in 1875) at Darenth, Kent, are the last definitely authenticated ones taken in this country. It was taken not uncommonly near London in 1858 and for a few subsequent years by R. McLachlan and Howard Vaughan and then seems to have faded out. It is, however, a member of a not very popular group and not very easy, in spite of the raised scaling, to distinguish from *A. tumidella* Zinck., and now that the m.v. lamp is becoming so popular I am confidently expecting its rediscovery at Ham Street or elsewhere.

In the Suffolk list the late Mr. Claude Morley recorded it for Fritton; but although this record is quite probably correct I think it should be checked by a specialist. This should now be easy as W. G. Sheldon purchased Farn's specimens and bequeathed them to the South Kensington museum; so perhaps whoever now has Morley's moths might take them there for comparison.

Practical Hints

A good tool for disinterring pupae under herbaceous plants is a small garden hand-fork, three inches wide with four prongs 4 inches long and a handle of about a foot. Don't pull up Campion and Lychnis and sandhill plants, as some of them are perennials. A rake is not a good tool to use on sandhills as so many pupae are overlooked. It is wiser, as well as more profitable, to work slowly and methodically.

Harpyia bicuspis is a widely distributed species and winter is a good season to search birch and alder for its cocoons. These have been found on all sides of trees, sometimes under loose bark but more often in crevices on the bark, both on tall trees and on low ones. Empty cocoons obviously indicate favoured trees. The moth seems to avoid ovipositing on alders growing on the banks of watercourses.

As long as the leaves remain green, patches of Knotgrass (*Polygonum aviculare*) should be searched with a lamp at night: many species of larvae which feed throughout the winter whenever the weather is 'open' patronize this 'universal foodplant' before they wander away to other

herbage. The same applies to docks. Grass-eating larvae with the same habit can also be found on hedge banks at night throughout November.

When the ground is too wet to dig for pupae, or frozen too hard, concentrate on work with the moss-pick (*Ent. Rec.*, 63: 284). The wise lepidopterist never goes for a walk in winter without a moss-pick in his pocket. When you start to remove the moss from tree-trunks always begin at the top and work downwards. A fallen tree at the edge of a woodland soon becomes clad with patches of moss. Peel this off carefully on the upper side. Hibernating larvae found beneath moss should be put in a chip box in an outhouse or on a shelf under eaves out of doors; they should rest on, and be lightly covered with, dampish (sterilized) peat-moss—not the fine granulated stuff used for growing bulbs.

The two Swordgrass moths, *Calocampa exsoleta* and *C. vetusta*, remain on the wing until the first hard frost. They come readily to sugar, sometimes in the gardens of small towns, and arrive rather late at night. So it is wise for the November sugarer not to "shut up shop" too early.

Notes and Observations

VANESSA CARDUI L. IN CZECHOSLOVAKIA IN 1952.—The first specimens of *V. cardui* L. appeared in the neighbourhood of Praha and in other localities in Czechoslovakia at the end of April, apparently coming from the south. During the succeeding months they were seen in great numbers, but although the immigration was a large one it did not greatly exceed, in point of numbers observed, other recent big immigrations (1935, 1947). It was noted particularly at Stúrovo in southern Slovakia, and in southern Silesia at Praded, in the Jeseníky mountains, at 1,490 metres. During the summer many larvae were noted on *Cirsium campestre* (for instance at Potstejn in eastern Bohemia).—JIRI SMELHAUS, Belského 4, Praha 7. 15.ix.52.

MIGRANTS IN EASTERN EUROPE IN 1952.—This year there has been a great immigration of *Celerio livornica lineata* Fab. into Czechoslovakia. In August twenty specimens were captured at Olomouc in Moravia, and others were taken in Bohemia at Praha, Kysperk, Blatná, Jílové, etc. They were all caught at dusk while flying at the flowers of garden plants (Phlox, etc.). *Herse convolvuli* L. also has been abundant—even more plentiful than the first-named species.—JIRI SMELHAUS, Belského 4, Praha 7. 15.ix.52.

VANESSA CARDUI L. IN GERMANY IN 1952.—*Vanessa cardui* has been abundant in the Rhineland this year. Between 11th and 18th May many migrating specimens were seen passing by Krefeld; also at M. Gladbach on the 22nd May. Hr. J. Grosz noticed the first specimen at Hannover on 5th May. Some fourteen days later Hr. Beisse saw *cardui*, over a period of several days, in greater numbers than he had ever seen before, from 12 to 20 being seen daily. According to Hr. Schulte of Hannover *cardui* was abundant on the Baltic coast at the beginning of May. At Hildesheim in the neighbourhood of Brunswick *cardui* was abundant at the end of June, migrating en masse. At the beginning of August Hr. Grosz found the butterflies emerging in large numbers.

In view of the reports from the Baltic coast—although presumably not from the Soviet zone there—*cardui* would appear to have travelled not only across France northwards but also across West and Central Germany. Reports from the Soviet zone of Germany, or even from Poland, are difficult to obtain; but I hope to send you further reports of this insect from Germany east of the Elbe.—Dr. MAX CRETSCHMAR, Casselstrasse 21, Celle, Hannover. 19.ix.52.

[Much obliged to Dr. Cretschmar for this information.—ED.]

MACROGLOSSUM STELLATARUM L. IN HAMPSHIRE.—This species was seen here for the first time this year on 1st September, flying at *Cerato-stigma*. It visited the same clumps on the two subsequent days, but has not been seen since.—B. C. BARTON, Castle Mead, Highcliffe, Hants. 22.ix.52.

EUPLAGIA QUADRIPUNCTARIA PODA IN DEVON IN 1952.—The 'Jersey Tiger' seems to have been plentiful in Devonshire this year. I was staying at Paignton during August and my first specimen, a female, was brought to me on 5th August. Two days later I found two more resting on the foliage of a privet hedge in the garden and during the week could have taken an average of four or five a day in the same garden. After 14th August they were much less in evidence and only occasional specimens were seen. The last one I saw was on the 24th in full sunshine feeding, together with *Vanessa cardui* and *V. atalanta*, on the flowers of Buddleia. On 11th August I saw three moths resting on a wall; one of these I boxed and it turned out to be the yellow form, ab. *lutescens* St McGr. I obtained some eggs from the first two females taken and now have some five dozen young larvae which had hatched out between 15th and 17th August. They are still very small and are feeding very little but have not yet gone into complete hibernation.—J. L. ATKINSON, 76 Northwood Road, Tankerton, Kent. 25.ix.52.

DANAUS PLEXIPPUS LINN. IN KENT.—A specimen of this rare immigrant was reported to me as having been seen on 12th September in a hopfield at Tyler Hill, halfway between Tankerton and Canterbury. The fortunate person to have this experience was Mrs. M. Coomber, a keen member of our local Natural History Society. The butterfly settled on the ground within a few feet of her and she was able to examine it closely and has no doubt whatever as to its identity. After a few moments it flew around and finally disappeared over a hedge. Mrs. Coomber had visited the spot a number of times since, but there were no further visits from the 'Monarch'.—J. L. ATKINSON, 76 Northwood Road, Tankerton, Kent. 25.ix.52.

LAMPIDES BOETICUS LINNAEUS IN THE ISLE OF WIGHT.—On 30th August 1952 I had made a journey to the ledge under the cliff face at Luccombe, Isle of Wight, to collect seed pods of the wild pea for a London friend who required the larvae of a rare micro. On reaching the first clump I caught sight of what at first sight I thought was a hairstreak by its flight. My friend had just told me in a letter that eggs of *L. boeticus* had been found on everlasting pea, so this led me to look closely at everything moving. On marking the insect down I was delighted to see that it really was *boeticus*, but alas my net was in the haversack ten yards away! It was overcast at the moment and very close so I went for the net and was fortunate to find on my return that the insect was

still in the same place. I netted it and as it was a male transferred it to the killing bottle. I did not see another during the few hours I spent there and have visited the place since to search for eggs, larvae, or pupae, but without success, so it appears that the butterfly was a straggler. The only other records for the Isle of Wight are a male taken at Freshwater, 23.viii.1878, by C. D. Snell (*Entomologist*, 1879, **12**, 83) and one in 1945 at Dunose.—JOHN LOBB, Fernbank, Wroxall, Isle of Wight.

COLIAS CROCEUS FOURC. IN EAST HERTS.—*C. croceus* continues on the wing here. On 23rd September I saw 9 ♂♂ and a *helice* in the lucerne field mentioned in my note last month (page 288). The *helice* was very worn and torn: I kept her for eggs and she laid over 60, which have now turned deep orange and will soon hatch. On the 28th I saw 3 ♂♂ in the same field.—C. CRAUFURD, Denny, Galloway Road, Bishop's Stortford, Herts. 7.x.52.

CUCULLIA ASTERIS SCHIFF. IN ESSEX.—On 14th September 1952 nine larvae of *C. asteris* were found by myself and a companion near the Essex coast a few miles from Burnham-on-Crouch. They were feeding, or rather resting (it was afternoon and the sky overcast) on *Aster tripolium* growing in a semi-brackish ditch and were both full-grown and in the penultimate instar. The full-grown ones were of the pink form shown at Fig. 1b on Plate XCVIII of Buckler's *Larvae*, the others being green, as Fig. 1c. Not more than one larva was found on each plant, though two were on adjacent plants. Like *C. verbasci*, this species feeds by day as well as by night; some larvae which I came across in Sussex one afternoon in 1946 were feeding (on golden-rod) when found, and I watched them feeding when in a larva-cage later.—C. CRAUFURD, Denny, Galloway Road, Bishop's Stortford. 12.x.52.

CUCULLIA ASTERIS SCHIFF. IN SUFFOLK.—This species appears to be very local, as suitable localities for the foodplant (*Aster tripolium*), which it favours in Suffolk, do not occur everywhere; nor is the larva to be found wherever *Aster* grows. On 31st August 1952 I came across a marshy area just behind the shingle beach, and here *Aster* was the dominant plant, very abundant everywhere, even growing in damp sand at the edge of the beach. In places it was four feet high. The larvae were mostly on plants that were not too crowded together: they were at rest on the stems, from six to nine inches from the top of the plant. A certain indication of them was the sight of bare stems, the flower-heads having been eaten away. Some were full-grown, others only half-grown.

The first larvae 'went down' in sand the day after they were found. They make a chamber like *C. verbasci* but not quite so hard. The last instar larvae were dimorphic, ground colour pink or green, with only three longitudinal yellow stripes. The half-grown ones were green with yellow stripes. They fed readily on the flower-heads of Michaelmas daisies and garden golden-rod. Eighteen were found by searching in about an hour or an hour and a half. They were all found singly, but quite a few (nine) occurred in an area of about twelve feet by four.—D. A. ASHWELL, The Heights, Galloway Road, Bishop's Stortford. 12.x.52.

PROLONGED LARVAL DIAPAUSE IN THE GENUS LOXOSTEGE.—In connection with the note by H. C. Huggins (*Ent. Record*, 1952, **64**: 212) on the long larval diapause in *Loxostege palealis* Schiff., lasting in some cases for 18 months, Mr. J. Sneyd Taylor has written calling attention to his note (*Ent. Record*, 1942, **54**: 176) and his more complete account published earlier (*Farming in South Africa*, 1940, **15**, no. 176) on the life history of *Loxostege frustalis* Zellér, which is a serious pest to wool growers in the Karroo. It occurs in enormous numbers, which devastate the country from time to time. If the weather is moist brood after brood may emerge at intervals of about a month, but if the weather is unfavourable a prolonged diapause may occur, larvae remaining alive in their cocoons for many months. Under observation the larval diapause lasted for 314 to 424 days and some larvae were still alive in their cocoons after 581 days, or 19 months, after having spun up. He also says that *Loxostege sticticalis* Linn., the beet cutworm of Europe, may have a similar prolonged diapause. Both *frustalis* and *sticticalis*, like *palealis*, are to some extent migratory. Mr. Taylor thinks the diapause noted by Huggins in *palealis* is quite normal, though probably caused by environmental conditions.—E. A. COCKAYNE.

EARLY EMERGENCE OF GYMNOSCELIS PUMILATA HÜBNER.—In connection with the recent record of this species in February (*Ent. Record*, 1952, **64**, 121) Mr. Nigel Easton has called my attention to two records of his own (*Entomologist*, 1932, **65**: 62, 105). Two *pumilata* in perfect condition were taken on the window of his sitting room in Brighton, one on 18th January and the other on 28th February 1932. *Pumilata*, unlike pugs of the genus *Eupithecia*, often passes the winter as a fully formed moth inside the pupa-case, and, if it receives the right stimulus, may emerge very late in the same or very early in the next year.—ED.

HORISME VITALBATA SCHIFF. TWO YEARS IN PUPA.—A female of this species was taken at Marlston, Berkshire, on 22nd August 1950. It was worn and laid 6 eggs before dying. Four pupae were obtained and kept in a glass-topped tin. As none of them emerged in 1951 the tin was put away and forgotten until 9th June 1952, when it was required for other larvae. On opening it a moth escaped and was found to be a ♀ *H. vitalbata* in fairly fresh condition, having apparently emerged four or five days previously. The remaining three pupae were dead, having dried up. I can find no record of this species passing two years in the pupal stage.—N. T. EASTON, 92 Connaught Road, Reading. 29.ix.52.

A SECOND BROOD OF SPHINX LIGUSTRI LINN.—On 31st May 1952 a pairing was obtained and one male emerged on 18th August. It was normal in every way. I have never heard of a partial second brood of this species.—N. T. EASTON, 92 Connaught Road, Reading. 29.ix.52.

ABERRATIONAL LARVAE OF SPHINX LIGUSTRI LINN.—A pairing was obtained with a male and female of this species, bred from 1951 larvae collected from hedges in various parts of Sussex. From about 100 larvae resulting from this pairing four larval aberrations were bred. Two of them, one of which died from a polyhedral disease in the last instar, had blackish-brown patches below the spiracular line on each of the seven abdominal somites which bear the lilac stripe. Dr. E. A. Cockayne, who

has seen the photograph which was taken of one of these larvae by Mr. Baker of Reading Museum, remarks that there are two blown larvae in the national collection with deep purple patches in the same places as mine but a little smaller. The other two aberrational larvae showed irregular patches of lilac here and there, chiefly in the dorsal area. In one of them the 5th lilac stripe, on one side only, was twice the normal width and there were odd patches at the top of the 4th, 5th, and 7th lateral stripes.—N. T. EASTON, 92 Connaught Road, Reading. 29.ix.52.

PREVENTION OF MILDEW.—In the various letters on this subject that have appeared recently in *The Entomologist's Record* I was surprised to see no reference to Thymol. I have found a few crystals of this substance placed in tins containing papered specimens an effective mould-preventive.

I was also surprised to read Captain Hayward's remark (*Ent. Rec.*, 64: 183) that naphthaline does not normally kill insect pests. A few naphthaline moth-balls placed in a close bookcase were certainly effective killers of small and medium sized cockroaches, the insects being found lying dead on their backs a day or so after the moth-balls had been introduced.—D. G. SEVASTOPULO, P.O. Box 401, Kampala, Uganda. 23.ix.52.

A NOTE ON "BUTTERFLIES IN THE COASTAL REGION OF NORTH WALES".—With regard to the note by J. Antony Thompson in *Ent. Rec.*, Vol. 64, page 261, there is no need for Mr. Thompson to apologize or ask forgiveness because my feelings have not been hurt in the slightest.

I merely stated facts. Prior to the publication of "The Butterflies and Moths found in the Counties of Cheshire, Flintshire, Denbighshire, Caernarvonshire, Anglesey and Merionethshire" in 1948 by the Chester Society of Natural Science, Literature and Art, I asked Mr. Thompson for his records. He wrote that my letter had placed him in a quandary as he had been engaged for the last five years in compiling an article on the different species found in North Wales and that he hoped the South London Entomological and Natural History Society would publish it.

Further requests were sent to him, but apart from the reference to *caernensis* and *thyone*, no further information was received.

It is very gratifying to know that Mr. Thompson will now give his help; within the next few weeks he will be sent a form asking for his records of Lepidoptera found in Cheshire and North Wales; any he sends that are new will be included in the next Proceedings of the Chester Society mentioned above.—S. GORDON SMITH, "Estyn", Bughton, Chester.

BLOCKS VERSUS BOARDS.—I am one of Mr. Minnion's 1% who use the block method of setting for most of my specimens and began to do so in 1893, so can claim to be "an old moth-hunter". My father had 100 blocks made for me when I was eleven years old and I still use them. Your article has provoked a very useful discussion, and the conclusion to be drawn, I reckon, is that a compromise is best, as so often prevails in other matters in this country. Powerful and succinct arguments and evidence have appeared for each type of setting, but I certainly feel that a lot of the 99% should obtain blocks, and use them where indicated.

When I read your article I felt that someone would show objection to your description of setting as "a waste of time", as many collectors enjoy the technique and are thrilled to see rows of specimens like Guardsmen at the Trooping of the Colours. Personally I am "torn two ways", as I admire the parade style and even envy it, and yet I think of "Nature abhors a straight line", and like to show specimens in resting position, preserved larvae, and cocoons, and do not like to see the upper wings of imagos forced up beyond a right angle.—Lt.-Col. W. BOWATER, 41 Calthorpe Road, Edgbaston, Birmingham, 15. 21.ix.52.

Collecting Notes

AVIEMORE IN 1952.—With respect to my article at page 280 of the last issue of *Ent. Rec.*, I have since heard from Mr. M. J. Leech of Formby, who stayed at Aviemore until 19th July, and he has sent me a list of the insects seen or taken during his visit from 12th to 19th July. He tells me that the weather deteriorated after I left on the 14th and he had but little sunshine. *Erebia aethiops* had hardly begun to emerge; he saw only one.

In addition to the species mentioned in my previous article Mr. Leech took or observed the following:—

Geometra papilionaria

Hydriomena furcata

Itame wauaria

Diarsia festiva

Axylia putris

Hadena thalassina

Lygris populata

L. mellinata

Colostigia olivata

Procus fasciuncula

Apamea secalis

Phalaena typica

Leucania lythargyria

Caradrina clavipalpis

Ourapteryx sambucaria

He also took larvae of *Harpyia furcula*, *Achlya flavicornis*, *Drepana falcataria* and *Thera juniperata*.—C. CRAUFURD, Denny, Galloway Road, Bishop's Stortford. 6.viii.52.

OPISTHOGAPTIS LUTEOLATA LINNAEUS AB. RUFICOSTA LEMPKE.—Towards the end of August 1952 I took at least 8 specimens of this aberration in the m.v. light-trap in my garden. During this period normal specimens were not very common. I have never seen this aberration in Tring before, and it seems probable that they were all members of the same brood, which had fed in the garden, and that the aberration is inherited.—A. L. GOODSON, 26 Park Road, Tring, Herts.

ABERRATIONS OF *ARICIA AGESTIS* SCHIFF. AND *AGLAIS URTICAE* L. IN BUCKINGHAMSHIRE.—It has been a bad year for 'vars.', but my son home from Korea picked up a nice obsolete *Aricia agestis*, and then I had a stroke of luck: a fortnight ago my wife told me that she had seen an ab. *semialba* Frohawk of *Aglais urticae* on our heath. *Urticae* was plentiful there up to 1949 when it practically disappeared, but this year it was abundant. My son and I searched for days for the *semialba*, but failed; but I did see and take (and nearly let go) a freshly emerged ab. *nigra* Tutt (Pl. 22, fig. 4, Frohawk's *Varieties*) and a fine large ab. *ichnusoides* Selys. My wife described the *semialba* as very like fig. 1 on Pl. 22 of Frohawk's book but with the hindwing red border pure white.

We shall hope to see it after hibernation!—Colonel S. H. KERSHAW, Alderman's Place, Aspley Heath, Bletchley, Bucks. 27.ix.52.

[*Ichnusoides* Selys = *impuncta* Lempke.—ED.]

A NOTE FROM EAST DORSET.—Although it has been a fine summer, it seems to have been a poor season for most entomologists. Larvae of three or four species that were plentiful in East Dorset last year are very much scarcer or even entirely absent this year, and most butterflies have been in very small numbers.—H. SYMES, 52 Lowther Road, Bournemouth. 30.ix.52.

BUTTERFLIES IN SPANISH PORTS.—The keen lepidopterist loses no opportunity to observe butterflies wherever he may be, even if actual collecting is out of the question. In June 1951 I visited Gibraltar and six Spanish Mediterranean ports, travelling by cargo vessel. Of these, Gibraltar, Alicante, Cartagena, Valencia and Barcelona provided little opportunity for seeing butterflies because other attractions claimed attention; moreover there was not always sufficient time to reach the countryside. During hot and sunny days extensive docks and built-up areas act as an effective barrier to any possible interest that may lie behind. Here and there in public gardens, however, I saw *Papilio machaon*, *Colias croceus* and *Vanessa cardui*.

At Palamos on 22nd June and San Feliu de Guixols on the 23rd I decided to take my collecting apparatus with me. These two towns are situated on the Catalan coast and are eight miles apart. Both are small and quite enchanting. Within ten minutes of leaving the ship I was making my way along flowered-covered roadsides and climbing the surrounding hills whose gentle slopes were sparsely covered with olive, mimosa, cork-oak and pine-trees. There were sufficient butterflies to keep me both interested and busy in the short time available, for I had a bare one and a half hours for collecting at Palamos and two hours at San Feliu de Guixols. I saw several Hesperidae but did not stop to identify them because of the many other more brightly coloured butterflies which held a greater attraction for me. *Papilio machaon* L. was in good condition and not uncommon; *Pieris rapae* L., *Pontia daplidice* L. and *Euchloe belia* Cr. occurred sparingly at San Feliu de Guixols. *Colias croceus* Fourc., *Melanargia lachesis* Hübn. and *Maniola pasiphae* Esp. were abundant, the last-named being worn. The following were also taken:—*Gonepteryx cleopatra* L. (males only), *Satyrus circe* Fab., *Eumenis semele* L., *Pararge aegeria* L.; *P. megera* L., *Maniola jurtina* L., *Vanessa cardui* L., *Thecla ilicis* Esp., *Heodes phlaeas* L., *Polyommatus icarus* Rott. and *Aricia agestis* Schiff.—F. M. G. STAMMERS, M.B., Fifield House, Manor Road, St. Albans. 11.ix.52.

DIPTERA

Retarded Emergences in Gall Midges

By M. NIBLETT, F.R.E.S.

For many years I have bred gall midges from their larvae collected in the galls. Many species are double-brooded but I propose to speak only of those where there has been a partial emergence in the first year, followed by another in the following year. Out of the numerous species

I have bred 18 have had this double emergence, of these in 17 species the larvae leave the galls to pupate in the earth, those of the remaining one *Jaapiella veronicae* Val. pupate in the galls.

Anabremia viciae Kieff.:—The larvae live in flowers of *Vicia cracca* causing them to remain closed and swollen; from larvae collected in July a few midges emerged in August followed by a considerable number in June and July of the following year.

Contarinia ? helianthemis Hardy.:—The gall of this species on *Helianthemum chamaecistus* consists of the terminal leaves formed into a pouch in which the larvae live; they leave the gall, not remaining in it to pupate as is sometimes stated. From larvae collected in mid-August midges emerged in September with another series coming out in the following June.

C. hypochoeridis Rübs.:—The larvae attack the seeds of *Hypochoeris radicata* causing considerable distortion to these and the flower-head. From larvae collected in May midges emerged in July with another emergence in June of the following year.

C. medicaginis Kieff.:—The larvae live in the flowers of *Medicago sativa* causing them to swell considerably and to remain closed. From larvae collected in mid-August a number of midges emerged in September, with an equal number emerging in the following June and July.

C. schlechtendaliaana Rübs.:—The larvae are found in the flowers of *Sonchus* spp.; from a series collected in July there was an emergence in August, the remainder coming out in July of the following year.

C. solani Rübs.:—The flowers of *Solanum dulcamara* are swollen and remain closed. From larvae collected in August numerous midges emerged during September, followed by a number in May of the next year.

C. steini Karsch.:—Flowers of *Lychnis album* were collected at the end of July containing numerous larvae; during August and September a number of midges emerged, followed by another series in May of the following year.

Dasyneura artemisiae Rübs.:—The larvae of this species live in the flowers of *Artemisia vulgaris* causing distortion. From larvae collected in early August midges emerged at the beginning of September, with another emergence in May of the following year.

D. bryoniae Bouché.:—The larvae attack the terminal shoots of *Bryonia dioica* causing considerable thickening and distortion. From a series of larvae collected in August midges emerged in September, followed by another series in the following May.

D. crataegi Winn.:—The gall consists of a rosette of terminal leaves of *Crataegus monogyna*. Larvae were collected in early July from which a number of midges emerged towards the end of the month, also a single specimen came out in the following June.

D. loewiana Rübs.:—The galls consist of leaflets of Vetches folded into the form of a pod. From larvae in galls on *Vicia tetrasperma* collected in August, midges emerged in September and in the following April and May.

D. pustulans Rübs.:—The galls take the form of discoloured raised pustules on leaves of *Spiraea ulmaria*. Larvae collected at the beginning of August gave me midges at the end of the month and in the following June.

D. urticae Perris.:—The galls consist of rounded swellings on the leaves of *Urtica dioica*; from larvae in galls collected in August numerous midges emerged in September and October, and about an equal number in the following year from April to July.

Jaapiella medicaginis Rübs.:—Leaflets of *Medicago sativa* are folded into a pod by larvae of this species; from larvae collected in mid-August midges emerged at the end of the month, and a few more came out in the June following.

J. veronicae Vallot.:—The galls are formed by the terminal leaves being folded into a pouch; Galls on *Veronica chamaedrys* were collected in August, a few days later a number of midges emerged, and in April, May and June of the following year another series emerged.

Kiefferia pimpinellae F. Lw.:—The galls consist of swollen seeds of various species of Umbelliferous plants; from larvae collected in August from *Silva flavescens*, midges emerged in September, and also in July and August of the following year.

Wachtliella rosarum Hardy.:—Leaflets of various species of wild Roses are folded into the form of a pod by the larvae of this species; from galls on *Rosa canina* collected in July midges emerged in August and in the following May; others collected from *R. canina* in August yielded the midges in October and May.

W. stachydis Br.-W.:—The leaves of *Stachys sylvatica* are rolled and thickened by the larvae of this species; from larvae collected in June numerous midges emerged in July and August, followed by a small emergence in the following June.

It is difficult to suggest a reason for the above behaviour, it may be a provision to assist survival, the insects emerging late in the year would not find material suitable to oviposit in and would have to hibernate, those passing the winter in the larval state would probably have a better chance of surviving. There are, however, many species which emerge regularly late in the year, but excepting those I have mentioned I have had none act in the manner described.

Fifty Years Ago

(From *The Entomologist's Record* of 1902.)

Epunda lutulenta is now becoming increasingly scarce since its 'climax' in 1900. I use the word climax intentionally, because I feel certain that there is some sort of culmination in the occurrence of almost all, if not all, forms of life. Consider our Lepidoptera! What collector does not know how curiously the abundance or scarcity of different species varies in different seasons. Certainly, if the hunting-ground be the same from year to year, as mine is, this peculiarity forces itself upon one's attention. I recall, amongst many others, a *Dicycla oo* year (1887), an *Agrostis obscura* year (1894), a *Mamestra abjecta* year (1900), and I have heard of *Noctua depuncta*, *N. sobrina*, and even *Plusia bractea* years. I do not seek to explain the fact, though I accept it as fully as that there may be years of *Colias edusa*, *C. hyale*, *Euvanessa antiopa*, *Agrius convolvuli*, and *Plusia gamma*. There may be more than we understand in the complications brought about by the variations of the climatic conditions of succeeding seasons, or there may be something related to overcrowding, or over-competition, or over-production. I do

not know what it is, but there is a rise and fall of species, as of nations, and the culmination of a species I call its 'climax'.

The climax of *Epunda lutulenta* is past. I arrived upon the scene before the species reached its height. I tell no man the full numbers of specimens I have taken, suffice it that I took in 1899 nearly twice the number of the previous year, and in 1900 double the number again. Thence the numbers decrease. Last year I halved the product, and, again, this year, assiduous collecting has failed to produce more than, roughly speaking, half again; and, with the falling off of the actual number of specimens, comes also a falling off in the number of aberrations, for which of course I chiefly look. In 1899 14% were grey, in 1900 11%, and in 1901 3%

I do not notice any marked backwardness in this species. It appeared here first this year on September 12th. In 1898 it came on September 21st (perhaps I found it late), in 1899 on the 15th, in 1900 on the 11th, and in 1901 on the 5th. It is a remarkable thing to me that I never get a specimen after October 9th, and that the first good steady rain cuts it off entirely. After a night's pouring rain I may get one specimen, but that is the end.—C. R. N. BURROWS, Mucking, Essex.

Current Literature

THE FEMALE GENITALIA OF THE NOCTUIDAE. F. N. Pierce. Second edition, 1952, published by E. W. Classey, 91 Bedford Lane, Feltham, Middlesex. Price, 30s.

The first edition, published in 1942, was limited to 100 copies and is very difficult to obtain. The plates are very small, but they do enable entomologists to make a rough comparison of the various genera and species. The author was over 80 years of age when it appeared, and this, no doubt, accounts for the numerous errors of spelling, which have been corrected by Mr. W. H. T. Tams in the new edition. The book is a perfect example of the danger of trusting to a single character as a guide to affinity, for instance *Eremobia ochroleuca* Esp. is placed between *Arenostola brevilinea* Fenn and *Nonagria typhae* Thunb. and *Phlogophora meticulosa* Linn. between *Agrotis*, *Actebia praecox* Linn. and *Euxoa*. A consideration of other characters would have prevented such a remarkable arrangement. In spite of its defects it is unlikely that this work will be supplanted for a generation at least, and every entomologist who is interested in the genitalia of the British Macrolepidoptera, especially those who possess the companion volumes, ought to obtain a copy. Mr. Classey is to be congratulated on his enterprise, which has made this possible.—E. A. C.

We have received the second lieferung of DIE SCHMETTERLINGE VON MITTELEUROPA by Dr. W. Forster and Prof. Dr. Th. A. Wohlfahrt. The first part is devoted to a long and detailed description of the arrangement and labelling of a collection, the removal of grease, and protection from the usual pests, of which figures are given, and the way to destroy them if they have attacked the insects. The authors recommend one to place a row of butterflies on the left side of a drawer, and then another with wings overlapping those of the first row and so on. Space is saved, but the removal of a given insect is made very diffi-

cult. The second part is a continuation of the descriptions of the *Satyridae* and the *Nymphalidae*. The generic names differ in some cases from those recommended by the Committee on Generic Nomenclature of the Royal Entomological Society of London and amended by Francis Hemming in four species in *Butterflies* by E. B. Ford. *Agapetes galathea* Linn. replaces *Satyrus*, amended to *Melanargia*. *Agapetes* is now used in *The Entomologist*, so perhaps Hemming has changed his mind again. *Hipparchia semele* Linn. replaces *Eumenis*, *Dira megera* replaces *Pararge*, *Pyronia tithonus* Linn. replaces *Maniola*, and *Inachis io* replaces *Nymphalis*. Evidently Continental entomologists are splitting up genera more than those in this country. The figures on the plates are chiefly those of the genus *Erebia*, and reach a higher standard than the earlier ones of the *Pieridae*.—E. A. C.

COWLEY, J. *Mid-Somerset Butterflies*. Mid-Somerset Naturalist. Supplement to First Report, 1951.

An annotated list of the butterflies recorded within a radius of twelve miles of Bridgwater. *Argynnis aglaia*, *Euphydryas aurinia*, *Plebejus argus*, *Lyサンドラ coridon* and *L. bellargus* are reported as having decreased. The reduction of *P. argus* is attributed to peat cutting on the heather moors and the burning of bog myrtle probably resulted in a reduction of *E. aurinia*. A few scientific names are wrongly spelt, doubtless due to printing errors.—D. F. O.

BRITISH PYRALID AND PLUME MOTHS. By Brian P. Beirne, M.A., M.Sc., Ph.D. $6\frac{7}{8} \times 4\frac{7}{8}$. Illustrated: 15 Coloured plates and 189 drawings and diagrams. Pp. 208. Frederick Warne & Co., Ltd., London. Price, 21s.

A welcome and long overdue addition to the Wayside and Woodland series, Dr. Beirne's work on the superfamily Pyraloidea should be in the possession of all who study the Lepidoptera of Great Britain and Ireland. This clear and readable book should encourage the study of an interesting but neglected group of moths, even by those whose interest and labours have been devoted only to the so-called Macro-lepidoptera.

The aim of the book is to facilitate the identification of our native species and to collate what is known of their habits and life histories. The methods of identification are clearly set out in the Introduction. These methods are far in advance of those used by South in *Butterflies and Moths of the British Isles*, in that the whole structure of the insect is used rather than colour and wing pattern. Figures of genitalia are given for a few critical species. The fact that descriptions are omitted from the text to provide space for biological information in no way detracts from the value of the book. The excellent and comprehensive keys, used in conjunction with the numerous well executed drawings, make the identification of genera and species reasonably easy. In the Appendix is a Glossary of terms used in the present work and in standard works on British Lepidoptera.

The main part of the text (in which the author has had the assistance of several well-known microlepidopterists) deals with life histories, habits and distribution, with a few notes on variation of the imago. The collection of information from various books, papers and periodicals

into one volume is valuable and should do much to encourage the study of the early stages, of which we know all too little: as Dr. Beirne points out, descriptions of many species have often been made from a single larva and these were often too brief. The life histories of some species of the genus *Ephestia*, which feed on stored products, are given in detail, as also are those of the genera *Nymphula*, *Cataglyphis* and *Acen-tropus*. The diagrams showing habitats and foodplants are most useful, setting out a summary of the species one may expect to find on various foodplants and types of breeding grounds. The known range of distribution is compiled mainly from county lists published between 1898 and 1948. A table of county lists is included in the Appendix.

Unfortunately the reproduction of figures on the coloured plates is poor and few can be fairly used in conjunction with the keys and black and white drawings. Many figures are blurred and the colour values wrong, possibly because too coarse a screen has been used. One cannot help making comparison with the excellent coloured drawings of the *Tinaeidea* by Mr. S. N. A. Jacobs in the recent *Proc. and Trans. S. London Ent. and Nat. Hist. Soc.* However, as stated above, the identification of genera and most species can be accomplished by use of the keys and drawings without reference to the coloured plates.

The only slips we have discovered are that in the key to the genus *Crambus* the references on page 55 to the median streak of the forewings of *C. furcatellus* Zett. and *C. margaritellus* Hübner are reversed. *C. inquinatellus* Schiff. is omitted from the key.

The failure of the colour printing should not deter one from obtaining this book, which is one of the most useful works published on British Lepidoptera for many years.

H. N. M.

THE OBSERVER'S BOOK OF THE LARGER BRITISH MOTHS by R. L. E. Ford, F.R.E.S., F.Z.S. 196 illustrations in colour and black and white. Frederick Warne and Co. Ltd. 5s.

This little book belongs to the well known Observer's Pocket Series and is not intended for the serious student. Only the Sphinges, most of the Bombyces (*sensu lato*), and a few species belonging to other families are included. Many of them are unlikely to be seen by the observer in any stage until he has ceased to be a beginner, and some may spend a life-time without being lucky enough to see *Utetheisa pul-chella*. It is therefore surprising to find no example of the brightly coloured day-flying *Zygaenas* included. The coloured figures of each species are very good and black and white drawings of the egg, larva, and pupa are given in many cases. There is little to find fault with in the letterpress, and there is an unusual absence of misprints. It is an attractive little book and it is surprisingly cheap.

E. A. C.



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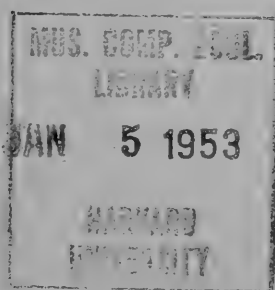
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Editorial

This issue completes the first entire year, January to December, of the *Record* under the new régime, and our Contributors have every reason to be proud of themselves; for this volume now completed contains more pages of reading matter than any volume issued since 1901. Not only that: it contains more pages of reading matter than the 1952 volume of any monthly entomological magazine published in the world.

In the first 20 volumes of the *Record* the average number of pages of reading matter per volume was 332; for the last 20 years (1931-1950) the average has been only 147. Now, at a bound, the *Record* has not only regained its original amplitude but has attained a figure—364—which has only once been surpassed, and that fifty-one years ago, when it achieved its maximum, namely 381. Next year it had dropped to 356, and even this figure was never reached again—until 1952.

Surely this is a remarkable achievement by our Contributors! They have staged a 'come-back' which to the best of our knowledge is unparalleled among magazines. They have brought about a renaissance which has attracted the attention of entomologists throughout the world. Thanks to their resolution and energy the *Record* has now subscribers in most of the countries of Europe (including Russia); in Turkey, Persia, Malaya, India, and China; in North and South America; in South, Central, West, East and North Africa; in New Guinea, Australia and New Zealand. Wherever there are entomologists the *Record* is now read—and appreciated.

Yet although contentment is said to be better than great riches it is not in man's nature to be content, and (in Horace's words) "*Laetus in praesens animus, quod ultra est oderit curare*"—the mind that is contented with the present will shrink from caring about the future. We—your editorial staff—care very much about the future of the *Record*: we want it to become better and better; we want to give you more pages and more illustrations. And unhappily this can be achieved only by a longer subscription list.

So it is to your advantage that the *Record* should become more widely known. There are still many entomologists who do not take in any magazine devoted to their hobby, many who have never heard of the *Record* and do not know that such a magazine is in existence. How can we reach these good fellows? Nobody likes proselytizing; canvassing is a hateful task; propaganda is always suspect. But if you happen to correspond with someone who you know does not take in the *Record*, remember that a hint to us will bring him a specimen copy forthwith. Do please bear this in mind.

Winter is upon us, and what is more delightful than an arm-chair before the fire with a pile of back numbers of the *Record* at our side? What happy memories are stirred by a chance paragraph, an article on collecting in some place we ourselves have visited! The weather may preclude field work; but in the pages of the *Record* we can go collecting to our heart's content. And these are pleasures which are denied to those to whom the *Record* is unknown. What better Christmas present for a brother entomologist than a year's subscription to your magazine?

THE EDITOR.

A New Melanic Mutation in *Gonodontis bidentata* Clerck

By E. A. COCKAYNE, D.M., F.R.C.P.

Gonodontis bidentata Clerck ab. **bowateri** ab. nov.

This is distinct from ab. *nigra* Prout and occurs in combination with ab. *mediorufa* Cockayne and ab. *nigrofenestrata* Cockayne. The thorax is almost always reddish orange or buff, and rarely brown as in ab. *nigra*. On the upper side of both fore and hindwing there are interneural buff markings at or near the margin, or the whole border is buff, lightly or heavily sprinkled with black scales; this border is 2 mm. wide and even wider where the dentate projections of the forewing occur. In one specimen in addition to the buff border almost the whole of the hindwing is suffused with buff very lightly sprinkled with black scales, but there is a blackish streak running from the base through the discoidal spot to the dark transverse line and a shorter blackish streak close to the inner margin; it is also an example of ab. *mediorufa*. In others, all *mediorufa*, there is the same arrangement of blackish streaks on the hindwing, but a buff area occupies the basal part of the wing between the discoidal spot and the black streak near

EXPLANATION OF PLATE XIV.

All the specimens are examples of *Gonodontis bidentata* ab. *bowateri*.

Figs. 1, 2. Paratypes ♂.

Fig. 3. Type ♂.

Fig. 4. Paratype ♂.

Figs. 5-10. Paratypes ♀, 6-10 combined with ab. *mediorufa*.

Fig. 11. Allotype ♀.

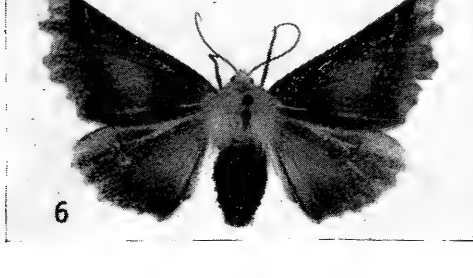
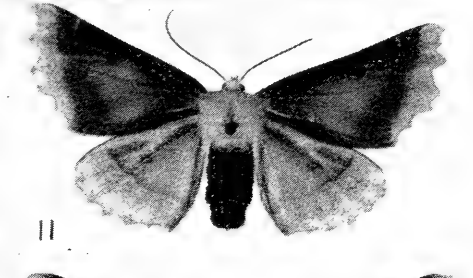
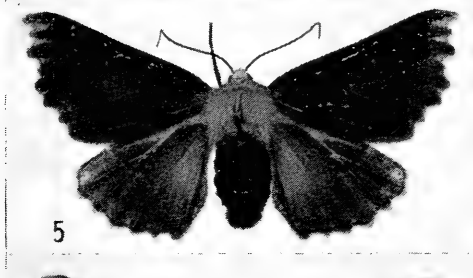
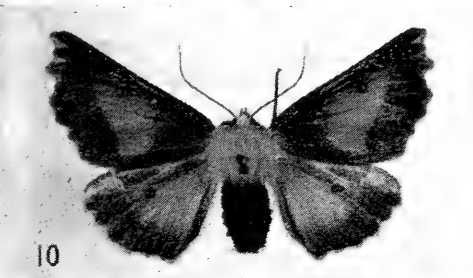
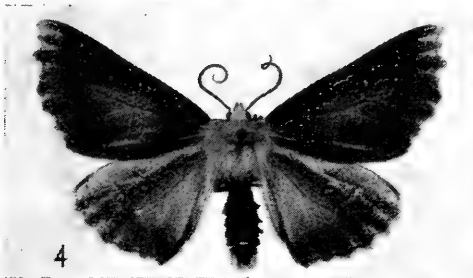
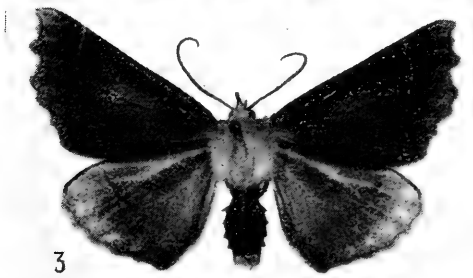
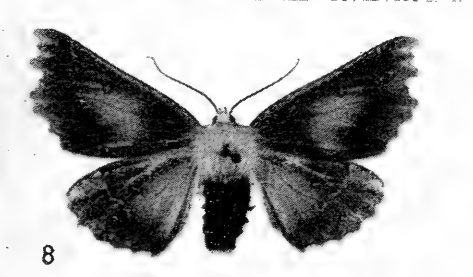
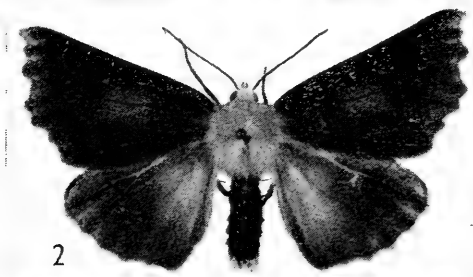
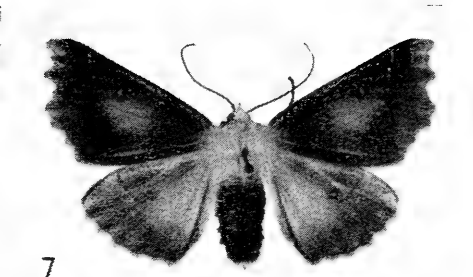
Fig. 12. Paratype, under side ♀.

the inner margin; along the margin there are only short interneural buff wedges. The fringes, even in the blackest specimens, are buff coloured on both fore and hindwing. The abdomen is black with reddish orange or buff scales at the extremity in both males and females. On the under side of both fore and hindwing there is a narrow buff coloured border, about 2 mm. wide, very lightly sprinkled or more or less suffused with black scales, the suffusion being greatest in those with the smallest buff interneural markings on the upper side.

Type ♂: Cannock Chase, bred 1952 by W. Bowater. Fig. 3.

Allotype ♀: same data. Paratypes 3 ♂, 7 ♀: same data. ♂ figs. 1, 2, 4. ♀ figs. 5-10, under side fig. 12. Figs. 6-10 show ab. *bowateri* combined with ab. *mediorufa*.

This is only a new mutation in the sense that it has not been described or named before. Lt.-Col. Bowater's stock originated from a specimen bred in 1949 by Mr. G. B. Manly from a larva beaten at Cannock Chase. It is said to have been completely black on the upper side with a buff border suffused with black on the under side. The offspring were similar, but, by selecting those with the most distinct buff border as parents, specimens like those shown in the plate were obtained. Mr. Manly says it is the ordinary melanic form on Cannock Chase and Lt.-Col. Bowater says it was known as early as 1915. Ab. *nigra* originally came from Leeds and was named in 1901. A similar



case of two melanic forms one with and the other without a light border occurs in *Tethea* or Schiff. *Ab. albingensis* Warnecke is black with white stigmata and the more recent form *ab. marginata* Warnecke has a white border on the upper side of the forewing, but not on the under side. In each case the two melanic forms may be allelomorphs.

Two New Subspecies of *Hipparchia semele* Linnaeus

By Dr. GUSTAF DE LATTIN.

In the course of an intimate study of the group of species around *Hipparchia semele* L. the necessity occurred to name several well characterized new subspecies. Two of these, which in my opinion should be of special interest to British entomologists, will be described in this paper.

1. *Hipparchia semele* L. **clarensis** n.ssp.—A series of Irish specimens from Co. Clare is different at the first glance from all the other races of this species by reason of its very divergent males. Irish males and females on the whole are richer and redder brown on the upperside, and on the underside have the black lines deeper black, and look richer in general, than English ones. But in ssp. **clarensis** the ground colour of the upper side is relatively light with a quite apparent incline to grey, contrary to insects from England and Germany which show a ground colour of a more pronounced brown; the very pallid marginal band is so much dusted with dark scaling that it is very ill defined from the dark proximal part of the wing. The hindwings are in general altered in a similar way, only the marginal band is more distinctly defined and shows the brick-red triangular spots on its distal part strikingly small and pale. But the most apparent characteristic of this subspecies is the great reduction of the androconial spot on the forewings of the male, this spot being relatively large in the typical form, extending from the analis to the end of the cell as an oblique band. In the Irish specimens from Co. Clare this band is confined to a few remains in the region of the lower cell border, so that at first sight one gains the impression that the androconial spot is entirely lacking. The under side has also a paler ground colour and therefore appears very light, this impression being enhanced by the broad milky white distal edging of the postmedian line, which is only relatively little dusted with dark scales. The female is differentiated more or less the same as the male, yet the difference is not so sharp because the androconial difference is lacking; from its neighbouring English and Continental populations it can be best distinguished by its strikingly greyish ground colour.

Holotype: 1 ♂, Co. Clare, 18.7.1926. L. A. E. Sabine coll.

Allotype: 1 ♀, Co. Clare, 19.7.1926. L. A. E. Sabine coll.

Paratypes: 1 ♂ 3 ♀♀, Co. Clare, 18/19.7.1926. L. A. E. Sabine coll. All these specimens are contained in the collection Pfeiffer, München.

[In the Zoological Museum at Tring we have 2 ♂♂ and 2 ♀♀ from Co. Clare. The androconial streak, which Dr. de Lattin stresses, varies a good deal in size in both English and Irish males from other counties, but on the average it appears to be about the same in both. In the 2 Clare ♂♂ at Tring it is greyer and less conspicuous, but not actually

smaller. These two ♂♂ are certainly greyer on the upper side than any others from the British Isles, and the under side is pale. The ♀♀ can be matched by aberrant examples from other places, but if all Clare examples are alike they cannot be matched by a series from elsewhere. I think Dr. de Lattin is dealing with a local race peculiar to the limestone Burren and associated with the pale ground there, which may be considered a subspecies.—E.A.C.]

2. *Hipparchia algerica* Obth. **vallettai** n.ssp.—♂. On the upperside very similar to the real *algerica* and not at all to the nearest neighbouring subspecies *siciliana* Obth. The forewings are paler than in true African *algerica*, thus giving a sharp contrast to the dark androconial spot. The light marginal band is ochreous, but only clear in the region of the (sharply white kernelled) ocelli, the rest being more or less dusted with brown-grey, but still sufficiently visible. Hindwings of the same colour with a broad light marginal band, the distal part of which is 4/5 brick-red, and which gradually goes over into the narrow yellow proximal region; the veins cutting this band being dark and very faint. The anal ocellus is normal, kernelled with white. The underside of the forewings is of a warm reddish yellow-brown, all the edges of the wing being broadly brown-grey, on the costal part and the apex reticulated with black. The inner edge of the marginal band is well defined by a distinct dark shade lying between the band at the end of the cell; on the discus this shade becomes very ill-defined and is only marked by slightly darker red-brown shading. The underside of the hindwings is of a warm dark greyish-brown ground colour, with a middle-strong black reticulation, mostly at the basis and inner edge; transversal lines sharp and black, the outer one distal to the cell-vein protruding in a roundish projection with no apparent point, as is usually the case with the *algerica*-males. The white distal shading of the postmedian line is relatively restricted and of a clean white, reaching only a little over Cu₁, in some places sprinkled with a brown-grey reticulation; subterminal line also sharp and black.

Holotype: 1 ♂, Naxxar (Malta), 23.5.1939, leg. et Coll. A. Valletta.

I have separated this single specimen as a subspecies not only because of its isolated locality but, more important, because it is different from all the numerous *algerica algerica* I have examined, thus being very probably excluded from the normal variation of the North African nymotypical subspecies.

3. Lastly it might be of some interest to point out, that up to the present in Cyprus neither *semele* nor *algerica* has been found, although the appearance of the latter does not seem in the least improbable. All *semele* I have at hand from this island belong to the purely West-Asiatic species *pellucida* Frhst. They form a special subspecies of this, which should be called *cypriensis* Holik (*Zschr. Wien Ent. Ges.*, 1949, vol. 34;—see also: Wiltshire, *Ent. Rec.*, 1949, vol. 61, p. 73).

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CORRECTION. — *Semiothisa liturata* Clerck ab. *unicolorata* Richardson (*Ent. Record*, 1952, 64: 270) is a synonym of ab. *debrunneata* Osthelder (*Schmett. Südbayerns*, 1931, 507).

Some Observations on *Odontosia carmelita* Esper

By H. SYMES, M.A.

Poor 'Carmelita'! Since the introduction of the m.v. lamp it seems to have lost its claim to be called the 'Scarce' Prominent. Yet before this new method of collecting it was an insect that required working for, and these notes may perhaps be of help to those who do not use the m.v. lamp.

Let me start by saying that I do not agree with the statement in the September *Record* (64: 249) that the larva of *carmelita* does "not escape our observation by feeding high up on the foodplant," although this is true enough of the larvae of *alni*, *ruficornis*, and *dodonaea*. My experience is that *carmelita* larvae normally do feed on old, tall birch trees with few or no branches within reach of the beating-stick. I have first-hand knowledge of only two larvae that were beaten from mature trees of no great height: one of these was at Aviemore, the other at Cold Ash, near Newbury, where the late Claude Rippon worked hard for the species but obtained only one larva, although several males came to his electric light trap. Apart from this, all the specimens that I have found by prolonged searching of tree-trunks (two at Aviemore in 1938 and seven in the New Forest between 1940 and 1945) were taken on the trunks of tall trees which could not possibly have been beaten or searched for larvae. Before the days of the m.v. lamp (nights, I suppose I should have said) *carmelita* was best to be obtained, but only in small numbers, by the use of light and by searching tree-trunks.

My own experiences with petrol lamps were not happy. With two other entomologists I tried for *carmelita* at Aviemore on three nights in April 1938. The weather was mild and, to all appearances, equally favourable on all these nights. On the first of them, 22nd April, two males came, but on the 23rd and 26th we drew blank. Meanwhile, I found a female with crippled wings on 23rd April, three or four feet up an ancient birch trunk, and a perfect female at the foot of a trunk, only two or three inches from the ground, late in the afternoon of the 25th. I left the cripple on the trunk, where it remained for two nights but did not attract a male.

My second experience with light was in the New Forest on 3rd May 1939, when the late W. H. Jackson took me to a locality near Brockenhurst where he had previously taken two or three *carmelita* by this means. Nothing was attracted to our light this time but a keeper and a daddy-long-legs.

During the winter of 1939-40 I found a large clump of old tall birches between Brockenhurst and Lyndhurst which I thought looked a likely place for *carmelita*, and the first time I searched the trunks I found one. This was on 23rd April 1940. A second visit, on the 25th, was fruitless, but on the 26th I found a newly-emerged male at the foot of a trunk and a crippled female about three or four feet from the ground. I kept these moths in a cage that night, and about ten eggs were laid. I had no evidence that pairing had taken place, and doubted their fertility. Eventually four of them hatched on 7th May, and the rest shrivelled up. As no more eggs were laid on the following night I took the female back to the tree where I had found it and left it there: it remained for two days but had disappeared on the third. On 8th

May I made a thorough search of this tree and found a small batch of nine eggs on an isolated twig where I had last seen this female. I carefully pared off a slice of the bark which carried the eggs; and on 10th May eight of them hatched. I now had twelve larvae, which yielded ten pupae. Not a single moth emerged in 1941, but in 1942 they all came out, although two were cripples: one of these, however, came in very useful, as will be seen.

In April 1941 I paid four visits to this locality and on the 23rd I found a newly emerged female at the foot of a trunk. It had not yet expanded its wings and bore a close resemblance to a bumble bee. The time was 11.40 a.m. B.S.T. This moth expanded its wings in due course and developed into a fine specimen.

On 20th April 1942 I took one of my bred crippled females to the same locality and left it on a tree-trunk: next day I found a male near it, and fertile eggs were laid. Next year, on 20th April, Mr F. W. Andrews, to whom I had shown the locality, took a caged female there and on the 21st I met him and saw that two males had been attracted. 1944 was a blank year, but in 1945, an early season, I found a pair of *carmelita* in the same locality on 7th April, about four feet from the ground. Since then I have paid several visits to these birches, but without success. I know, however, that one *carmelita* was attracted to light there this year.

My experiences both at Aviemore and in the New Forest have led me to form some definite conclusions about searching for *carmelita* on birch trunks.

1. The best trunks are those of old tall trees;

2. The moth emerges in the morning and rests at the foot of the tree until the evening. It then crawls up the trunk and, if it is a female, takes up a position about three or four feet from the ground. Newly emerged specimens, therefore, should be sought at the foot of a trunk, and pairs (which seem to separate early in the morning but remain close together) higher up, about a foot below eye-level.

Searching tree-trunks is a tedious business, but in the case of *carmelita* I think it is much more profitable and less exhausting than beating for larvae.

[In the nineties of last century W. Holland and W. E. Butler, the Reading collectors, used to find the larvae of *O. carmelita* in most years by searching the birch bushes in a favoured locality. Towards the end of that decade I often accompanied the latter but never, myself, found this larva. The bushes were then not more than seven or eight feet high. In 1890 (the year in which he discovered *carmelita* to exist at that place) Holland wrote in this magazine that the larvae "were not sitting on the twigs as *Endromis versicolor* does, but on the underside of the leaves, along the stalk and midrib, making the leaves hang heavy with their weight." About this time Mary Kimber (afterwards Mrs. Chorley) also found the larvae near Newbury; Mrs. Bazett discovered it at Pamber Forest; and Father Bernard Smith took it at Marlow. He recorded that the imagines always emerged between 8 and 9 a.m., which was confirmed by others. In 1911 H. G. Champion reported that he had beaten the larvae "from young birches" near Chobham, Surrey (*Ent. mon. Mag.*, 47: 42), and Tutt quotes

'Marshall' for the statement that the pupae of *carmelita* "are to be obtained near Derwentwater at the foot of small birches," but I have not seen the reference. Mr. Charles Mellows tells me that at Aviemore in 1946 he beat two or three larvae of this species from birch bushes above the golf course and that in one case at least the bush was not more than three feet high. Scattered throughout the early volumes of the magazines there are records of finding the larvae of *O. carmelita* by searching; e.g. "Larva searching was fairly productive, and among other things turned up were . . . *L. carmelita*" (*Entom.*, 56: 214).

It may be that the female moth lays her eggs on any *Betula* upon which she happens to alight after pairing, whether bush or tree. Plainly the lepidopterist is more likely to find resting imagines on the trunks of sizeable trees since few field workers make a practice of crawling underneath bushes to search for newly emerged moths drying their wings on the trunks an inch or two above the ground or on debris. We shall be glad to hear from others who have found this larva. Judging by the records seen, this species is much more widely distributed than the books suggest.—P. B. M. A.]

Collecting Notes, 1952

By W. REID.

(Continued from page 205.)

Towards the end of May a decided change took place in the weather, and very cold nights predominated until well into the middle of June. *Eumichtis adusta* Esp. and *Rusina umbratica* Göze appeared in the Sheffield trap on 25th May.

Deilephila elpenor L., *Agrotis exclamationis* L., and *Spilosoma lubricipeda* L. came on the 29th, on which date *Saturnia pavonia* L. was flying on the moors. In spite of the cold nights, *Euplexia lucipara* L., *Ceramica pisi* L., *Diarsia festiva* Schf., *Eupithecia nanata* Hb., *Perizoma affinitata* Steph., *Semiothisa liturata* Cl., and *Cabera pusaria* L. appeared on the 30th; *Thera obeliscata* Hb. and *Eupithecia venosata* Fab. on June 1st, *Hepialus lupulina* Linn. on the 2nd, *Bupalus piniaria* L. on the 4th, while *Apatele leporina* L. and *Hadena cucubali* Schf. came in on the 4th and 5th respectively. The weather started to improve on the 11th and *Graphiphora augur* Fab. and *Hepialus humuli* Linn. appeared in the trap on this date. Business and other circumstances only allowed one collecting trip on the 2nd June when I went with Mr. Hyde of Doncaster to Laughton Common to try beating for larvae of *Enargia paleacea* Esp. and *Cirrhia gilvago* Schf. In spite of working all afternoon we only beat one of the former, which later produced a male, and none at all of the latter. In fact, we were both surprised at the scarcity of any larvae—I don't suppose we saw 10 altogether. It is quite possible that the very early Spring in this part of the country had caused them to feed up quickly and go down early, and that we were too late. *E. paleacea* was certainly early this year—flying freely (and some already worn) on July 24th at York.

The short warm spell brought on quite a number of emergences—on the 12th *Caradrina morpheus* Hufn., *Proculus fasciuncula* Haw., *Proculus strigilis* Cl., *Plusia pulchrina* Haw., *Apamea obscura* Haw., *Abraxas*

sylvata Scop., *Perizoma alchemillata* L., *Sterrhya aversata* L.; on the 13th *Abrostola tripartita* Hufn., *Plusia festucae* L., *Leucania comma* L., *Agrotis segetum* Schf., *Melanchra persicariae* L., *Polia nebulosa* Hufn., *Dysstroma truncata* Hufn., *Electrophaes corylata* Thun., *Chloroclystis coronata* Hb., *Dyscia fagaria* Thun. and *Zanclognatha tarsipennalis* Tr.; on the 14th *Scopula floslactata* Haw., *Meristis trigrammica* Hufn., *Cucullia umbratica* L., *Apamea infesta* Ochs., *Mamestra brassicae* L., *Caradrina clavipalpis* Scop., *Polychrisia moneta* Fab., and *Petilampa minima* Haw.; on the 16th *Lycophotia varia* Vill.; on the 17th *Diarsia brunnea* Schf., and *Deilephila porcellus* L. on the 18th. On the 23rd *Plusia chrysitis* L., *Apamea monoglypha* Hufn., *Aleis repandata* L. and *Aleis rhomboidaria* Schf. On the 24th I was interested to take several *Zanclognatha grisealis* Schf. on the sheet in the garden, together with a very dusky form of *Cryphia perla* Schf. *Odezia atrata* L. was in very fresh condition and abundant round Sheffield on the 26th June. *Nola cucullatella* L., *Hypena proboscidalis* L., *Phalaena typica* L. and *Ortholitha umbrifera* Prout, appeared in the trap on 27th June, and four *Zeuzera pyrina* Linn. came to the sheet in the garden on the 28th.

On the 1st July I spent two nights at Sutton-on-Sea, on the Lincolnshire coast. Conditions were not good, but using the m.v. lamp on the very narrow sand dunes south of Sutton, we took nice series of *Agrotis ripae* Hb. and *Arenostola elymi* Tr. On the 3rd we tried the sandhills at Saltfleet where we recorded 77 species at the sheet. The most interesting of these were *A. ripae*, *A. elymi*, *Leucania pudorina* Schf., *Leucania litoralis* Curt., *A. infesta*, *Scopula imitaria* Hb., a nicely streaked *Spilosoma lutea* Hufn. and two policemen. The latter stayed chatting for about half an hour and seemed to be quite as much interested in the mentality of the collectors as they were in seeing the moths we were collecting.

I had to be in Scarborough on the 5th July and took the opportunity of visiting Spurn Point on the way home. As a N.E. gale was blowing we did not expect much, and only 10 moths appeared at the sheet, amongst them being one *Heliophobus albicolon* Hb. (much worn), one *A. ripae* Hb., and one *Pyrrhia umbra* Hufn. (also worn).

To Conway on the 17th July. Again strong winds with heavy showers which made conditions very unpleasant for collecting on the Sychnant Pass. It was difficult to find a place where the sheet would "stay put", but we found *Ammogrotis lucerneae* L. well out and fresh; *Amathes ditrapezium* Schf. getting over and *Amathes ashworthii* Dbld. very worn and only a single specimen of *Sterrhya eburnata* Wocke was seen on the rock faces. On the 24th July I took a friend to Sandburn, to see if *Dysstroma citrata* L. was out. Two years ago, I took a very nice form approaching var. *thingvallata* Staud. at this place, but this year we did not see any. 50 specimens were noted at the two white m.v. lamps we were using, under the cloudless sky, amongst them being *Deuteronomus erosaria* Schf. and *Sterrhya emarginata* L.

During July the following appeared in the trap at Sheffield:—*Eupithecia centaureata* Schf., on the 3rd; 6th, *Caradrina blanda* Schf.; 7th, *Tethea duplaris* L., *Lampra fimbriata* Schreb., *Plusia iota* L., *Geometra papilionaria* L., *Campaea margaritata* L., *Perizoma flavofasciata* Thun., *Cidaria fulvata* Forst.; 8th, *Ortholitha mucronata* Scop., *Leucania palens* L.; 9th, *Triphaena comes* Hb., *Colostygia pectinataria* Knoch,

Cosymbia punctaria L.; 11th, *Arctia caia* L., *Triphaena ianthina* Schf., *Leucania lythargyria* Esp.; 12th, *Cosmia trapezina* L., *Bombycia viminialis* Fab., *Apamea secalis* L., *Apamea scolapacina* Esp., *Eupithecia subfulvata* Haw.; 14th, *Abraxas grossulariata* L., *Parastichtis suspecta* Hb.; 15th, *Hadena trifolii* Hufn.; 16th, *Hydriomena furcata* Thun., *Lygris mellinata* Fab.; 17th, *Apamea lithoxyla* Schf.; 21st, *Lygris populata* L.; 22nd, *Nudaria mundana* L. and *Crocallis elinguaris* L.; 23rd, *Apamea ypsilon* Schf., *Lygris testata* L.; 27th, *Colostygia didymata* L., *Ortholitha limitata* Scop., *Ochlodes sylvanus* Esp.; 28th, *Amathes sexstrigata* Haw., *Amathes xanthographa* Schf.; 29th, *Zenobia subtusa* Schf.

On 6th August I ran the m.v. lamp just off the main road to Hathersage, well inside the Sheffield boundary and took 12 very fresh *Plusia interrogationis* L. before 10.30 p.m. The first *Hydraecia oculea* L. also came in, besides many other commoners. On the 12th *L. solidaginis* Hb. was the most abundant moth on the heather. I was hoping to pick up a series of *Diarsia dahlia* Hb. but did not see any. This insect did turn up at a Tilley lamp and the car headlights in some numbers on the 18th and 21st August. None appeared at the m.v. lamp which was burning about 150 yards away on the same footpath.

On the 23rd August I visited Dr. Birkett at Kendal and he took me to a favourite spot which he sometimes works near Morecambe. Here *Celaena leucostigma* Hb. was rather worn. *Oporinia filigrammaria* H.-S. was fresh, but the weather was cold and misty, and the night was not very productive. The same conditions prevailed when I visited Mr. and Mrs Austin Richardson on my way to North Devon on 28th August, and little appeared on the sheet near Minchinhampton.

August appearances in the trap at Sheffield were as follows:—3rd, *Hydraecia micacea* Esp., *Procus furuncula* Schf.; 5th, *Anaitis plagiata* L., *Luperina testacea* Schf.; 6th, *Hydraecia oculea* L.; 7th, *Euxoa nigricans* L.; 12th, *Deuteronomos alniaria* L., *Amphipyra tragopogonis* Cl. (on moor this date *Amathes castanae* Esp. and *Lithomoia solidaginis* Hb.); 13th, *Antitype chi* L.; 15th, *Cirrhia icteritia* Hufn.; 17th, *Deuteronomos erosaria* Schf.; 21st, *Amathes glareosa* Esp. and *Hepialus hecta* Linn.; 25th, *Nonagria typhae* Thun., (and I know of no place where the reed mace grows near us).

In North Devon, we took two specimens of *Antitype xanthomista* at sugar at Milloch on August 30th. Had the weather been warmer, we should no doubt have taken many more, but little else appeared on the two nights we worked that locality. On September 2nd, however, at Morte Hoe, we took nine more of this species. The only sheltered place to put the sheet was the open space between two rows of the Hotel Garages which were situated between the Hotel and the cliffs, and the m.v. lamp was quite hidden by the garage building and a rock face which formed the end of the yard. The males commenced to arrive as soon as the light was put on. They were quite fresh and must have been assembling, I think, to a fresh female which I was lucky to find in a dark corner of the rock face. Anyway, the males stopped arriving soon after we had boxed the female, but we had taken sufficient to fill the blank space in the cabinet. We left on the 3rd September for Holyhead and were not sorry as the rain was coming down in "sheets", with a N.W. gale blowing. That night at Holyhead, though cool, when the

wind had dropped, we took *Aporophyla lutulenta* Schf. amongst other things on the sheet. Some hours of searching the maritime campion roots on the cliff tops, near the lighthouse, were rewarded by finding 17 *Hadena barrettii* Dbld. larvae, all of which have duly pupated. We also found 5 pupae which may be *barrettii* or *Hadena conspersa* Schf. It might be supposed that there should be an appreciable difference in size between the pupae of these two species, but this is not the case with those from the Holyhead area. Certainly, the female *barrettii* pupae are the larger, but the smaller male pupae are no larger than those of *conspersa*. We also unearthed one *Aporophyla nigra* Haw. pupa which has since provided a fine female.

September was a poor month, and we only made one excursion, to Laughton again where *Catocala nupta* L. and *A. lychnidis* Schf. and *Dryobotodes protea* Schf. were present at sugar. On September 15th *E. paleacea* Esp., *Tiliacea aurago* Schf. and *Cirrhia gilvago* Schf. all turned up at the sheet in the garden, and on September 29th *Chloroclysta miata* L. was found resting on the outside of the trap. *Anchocelis helvola* L. was fairly common on the heather on the 9th, with odd specimens of *Citria lutea* Stom. The latter also appeared in the trap on September 11th, together with the first of the second brood of *obeliscata*. Other dates in September for Sheffield were:—10th, *Agrochola lychnidis* Sch.; 15th, *Allophytes oxyacanthae* L.; 16th, *Gortyna flavago* Schf. and *Epirrhoe alternata* Mull.; 17th, *Conistra vaccinii* L.; 23rd, *Colotois pennaria* L.; 27th, *Agrochola lota* Cl. and *Agrochola macilenta* Hb., the latter very common this year; 29th, *Agrochola circumcellaris* Hufn., *Scoliopteryx libatrix* L. and *Chloroclysta miata* L.

Eupsilia transversa Hufn. appeared on October 3rd and nothing fresh had appeared at the time of completing these notes.

The following were recorded in my trap as new to my Sheffield list:—*C. ruficornis* Hufn., *H. hermelina* Göze, *L. suffumata* Schf., *B. temerata* Schf., *Z. grisealis* Schf., *E. corylata* Thun., *C. punctaria* L., *D. erosaria* Schf., *N. typhae* Thun., *E. paleacea* Esp., *C. miata* L., *N. mundana* L.

It has not been a good year in the Sheffield district, and unsuitable weather has been prevalent on all my excursions. It seems to be generally acknowledged to be a poor season.

On Keeping a Diary

BY AN OLD MOTH-HUNTER.

I have always envied people who keep diaries—real diaries I mean, journals expressing in brisk vivid language the doings and sayings of interesting persons, and of those whom they met, almost daily throughout a lifetime. A friend once confided to me that he had written an account of his employments every day since he was a boy at school, and he was past threescore and ten when he told me that. In his case it must have been easy; material was ready to hand, for his father's house was visited by well-known people and he himself rose high in the world. But how about humbler folk, men like you and me, who pass our lives—well, just as you and I do? If we record our commonplace everyday doings our diary will be in the same class as that quoted by Addison in his skit on the journal of "a sober citizen" (*Spectator*, 4th March 1712):—

Wednesday. Eight o'clock. Tongue of my shoe-buckle broke.
 Washed hands, not face.
 Nine. Paid off the butcher's bill.
 Ten, Eleven. At the coffee-house. Stranger in a
 black wig asked me how stocks went.
 Twelve to One. Walked in the fields. Wind to
 the south.

And so on, throughout each hour of the day.

A journal on these lines is so much wasted paper and ink. The whole object of a diary should be to serve as an *aide-memoire*, a reminder of events and conversations which may have to be recalled some day: unless it performs this duty it is of no use at all. But a real diary does a good deal more than remind one: it carries its writer back to scenes of happiness, to walk and laugh and talk with old friends long since departed, to bring before him, as vividly as on the day when they were recorded, events which the years have dimmed.

The mistake which most people make when they start to keep a diary is this: they are determined to record every day's doings however trivial, with the natural result that after a week or two or perhaps a month or two they become bored with it since it consists for the most part of trivialities, and so they give it up. Only really interesting days and events should be set down, days on which something out of the common occurred, days which we are certain will be recalled with pleasure in after years. And the record must be sufficiently detailed to be able to bring back, years afterwards, *all* the incidents which led up to, and accompanied, the event. "14th October. Caught *G. furcifera*" is not merely useless: it is maddening. It omits all the details which invest a remarkable event with interest. It is as bad as "14th October. Cut John's throat." The smallest detail would be of interest here. "14th October. Cut John's throat at breakfast" would be a little better; but not very much: you may forget in after-life *why* you cut John's throat and will not even be certain whether you cut it at the breakfast-table or in the hall.

The whole secret of keeping a diary is to contract a habit of writing it up always at the same hour. If you write it at odd times you will never keep a proper diary: events of great interest in after years will be maddeningly brief; trivialities will be exasperatingly verbose. But if you have a fixed habit of writing at, say, half-past six every evening, whenever the clock announces that time you will *want* to write it; for habit begets a psychological urge and it is a greater bother to disobey the urge than to obey it. So you take the line of least resistance and write up your diary. That, at least, is what my old diarist friend assured me: it irked him if an engagement or interruption prevented him from sitting down to it at the accustomed time; he feared he might forget something he was anxious to record; he could not go to sleep until he had chronicled the day's doings and other people's sayings.

All entomologists keep diaries, though the affairs which they record concern only insects. Without a diary we are lost: we do not know *when* or *where* we took that larva of *bicuspis* twenty years ago nor what it was feeding on. We look at the data label under the moth and read "Slopley Bugwash, 14.vi.25" and for the life of us we cannot remember what we were doing at Slopley Bugwash in June 1925. We must

have passed through it on our way to Balmy-on-the-Wold, that year; so presumably we found the larva on a birch or alder by the roadside. But stay—didn't we stop the night at some place? Was that Slopley Bugwash? . . . Then we look at the moth again; but the memory of the event will not return.

My own diary starts abruptly—but then, I was young in both years and Entomology. "26 May 1891. Two full-fed *L. quercifolia*," followed only by the name of my home. No mention of foodplant nor circumstances. Yet this is one of the exceptions which confirm the rule: how well I can recall the details even after all these years! It was one of those great events of our lives which need no written record to keep them fresh. I was watching Johnson, the taciturn black-bearded gardener, trimming a hawthorn hedge in the orchard. What two full-grown Lappet larvae were doing high up in a hedge in the daytime I know not, but even now I can see with my mind's eye Johnson snapping a finger-thick shoot with his shears, picking out of the hedge something that fell from it and handing it to me with the words, "There's something for you, master." And a yard away he found another one, in the same way. But what I cannot remember, owing to my inefficiency as a chronicler, is whether the larvae cocooned and duly produced moths. I hope so; but in those days my larvarium consisted of only two larva-cages, little boxes of white wood, with glazed doors and perforated zinc at the sides. Into these two small cages I put every larva I found—poplar hawks, privet hawks, eyed hawks, puss moths, tiger moths, and so on, trusting that they would hit it off with each other. Perhaps the lappets didn't hit it off as well as I had hoped . . .

The lappets were followed by "16 June. On Tuesday evening got two *S. populi* (m. & f.) breeding also caught two *D. elephenor* humming round honeysuckle." What I was doing at home on the 16th June I know not; I ought to have been at school. However, there are only two entries for June, the 16th and 17th, so perhaps it was half-term. The 17th recorded "large quantities of *D. elphenor* at honeysuckle," so it must have been rather a good year for Lepidoptera. The spelling of *elphenor*, you will notice, was improving daily.

A year or two after this I went to live in the New Forest, right in the heart of the Forest; and the New Forest in those days was a very different place from the New Forest of to-day. Except that a few of the present enclosures (the smaller ones only) were bounded by posts connected with two flat rusty iron strips it was much the same as it had been throughout the centuries. There were no restrictions of any kind and one could walk all day long without seeing a human being. During all the years I was there I never saw a man with a net nor the black mark of sugar on a tree-trunk. Presumably the visiting entomologists made Brockenhurst and Lyndhurst their headquarters and 'worked' only the enclosures round about those small towns—little more than villages then. Once I trekked across the Forest for a fortnight with a chum, sleeping in a tent. The camp fire at night was usually visited by a friendly keeper who would stay for a yarn and, having assured himself that the fire was 'safe,' would go back to his cottage. The Forest was sparsely populated and a surpassingly lovely place; for there were no human inhabitants other than the villagers and keepers. The present hamlet of Stoney Cross did not exist, though the Compton

Arms was there—with an old cottage or two between it and Malwood, where the silent and rather saturnine Vernon Harcourt used to live.

I kept no regular diary during those years—would that I had—but my memories of the Lepidoptera are still vivid and I shall say nothing about them here; for moths and butterflies, particularly the larger species, were in such profusion as only those who knew the Forest in the last century can understand. It was indeed an earthly paradise for the entomologist.

Later in the same decade I went to live on the borders of Berkshire and Hampshire and 'worked' Burghfield Common—where *Endromis versicolora* was then plentiful—and the pine and heather country towards Stratfield Mortimer and as far as Pamber Forest, and had many a glass of ale at the ancient Fighting Cocks inn, burnt to the ground fifty years ago. One of the commonest butterflies, I see from my diary, was *Nymphalis polychloros*; White Admirals and the larger fritillaries were abundant too, and so were *Catocala promissa* and *Aegeria sphaeciformis*, the White-bellied Clearwing, whose larvae we used to hew out of the alder stools in coppiced woodlands. *Eheu fugaces*! There were 20 million less people in England in the 'nineties than there are today, and perhaps 4 million less houses. Building in the open countryside had not yet begun.

Yes, a diary can recall happy days; but it contains the elements of sadness too . . .

Notes on Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

Eurrhypara hortulata Linn. The larva of this common insect may often be found in a cocoon under loose bark on trees where nettles grow. It responds to gently forcing, pupating in a week or so instead of in May, its natural time, and emerges in another three weeks as a rule. Anyone therefore who wants the moth would do well to collect and force the full-fed larva, as he can then set the moth in the dead season instead of in the full rush of June collecting. I have had this moth brought to me two or three times in January by people who have found it in their kitchen in that month. No doubt the larva had crawled in when seeking a place to pupate and had been forced by the heat of the fire. This insect also caused me a great disappointment at the age of nine. I found a number of the larvae in their final cocoons in March under loose but healthy fir-bark, and after going through "Newman" several times decided I had an unknown clearwing, so that I was not exactly pleased when *hortulata* emerged.

Aphomia sociella Linn. The nasty-looking larva of this moth, which looks at a first glance like a "leather-jacket" with a lepidopterous head, has a habit of emerging from the bumble-bees' or wasps' nests in which it has fed and spinning gregariously under a plank or at times in a hollow log. It also, as is well known, often spins in the old nest. In 1950 I threw a roll of rotten linoleum into the garden and, unknown to me, it landed on a bumble-bee's nest. In the spring of 1951 as I was moving house and did not want to leave too much rubbish for my successor, I went to burn this and found inside it at least 200 cocoons of *sociella*.

Evetria resinella Lin. The big resin-galls containing the larva of this moth are conspicuous in its own districts of Scotland and may be taken in December. It must be remembered that the caterpillar has a two-year life-history, so that smaller galls are no use and should not be taken, as the larva does not feed in a cut shoot. The large galls, however, will now contain the full-grown larvae and if kept out of doors they are easy to rear. It is said that full-grown larvae are only found every other year.

Many things as well as larvae of *resinella* inhabit its galls. The late Robert Adkin, who for several years employed Salvage to collect them for him, told me that he bred from the galls *Laspeyresia cosmophorana* Treit. (several), *L. coniferana* Ratz. (a few), and five specimens of a *Dioryctria*, which at first he thought to be a new insect but afterwards decided was only *abietella* Fab. He very kindly gave me one of these and although it does not appear to be of quite the same facies as my other *abietella* I can find no decisive points of difference.

Practical Hints

Winter is usually considered the slack season for the lepidopterist. But this is true only of the armchair collector: it can be the busiest season of the year if so desired. There are several species of macrolepidoptera to be had by searching hedges and bushes after dark, there are larvae in plenty on banks and in hedgerows throughout the night—larvae which are to be found only with difficulty, and in much smaller numbers, later on. There are eggs to be found on twigs and there are pupae to be unearthed.

Winter is a good time to search for the cocoons of *Harpyia bicuspis*. This species seems to occur throughout the length and breadth of England and can usually be taken by those who make a 'dead set' at it—witness Dr. Chapman and Mr Miles Moss, who took it in fair numbers in Herefordshire and Norfolk respectively. The best way to find it can be compressed into one word—*assiduity*. There is no 'royal road': it is a matter of keeping on, spending mornings and afternoons, day after day, scrutinising birch trunks.

Attention should be paid to the Clearwings at this season. *Aegeria culiciformis* probably occurs in birchwoods throughout the country and lives, as a larva, under the bark on the stumps of birches felled the previous year. (Whenever you see, during the course of a winter's walk, men coppicing a birchwood, make a note of the spot in your diary, for future reference). Frass in plenty between bark and wood is a sign of this insect's presence; but often round holes in the wood, under the bark, are the only indications. The larva feeds upwards, eating the wood only, and spins a cocoon just under the surface in September, pupating the following April or even May. So it is wiser to mark the stump and conduct excavations next spring.

The stumps of recently felled oaks should always be prospected for *Aegeria vespiformis*. The moss-pick will enable you to pull a little of the bark, here and there, away from the wood and thus perchance discover the presence of the larvae. They live between the bark and the wood, the female moth having laid her eggs, in the summer, on the

stumps of trees felled the previous winter. Frass and much chewed wood usually indicate their presence. Larvae of this species have also been found under the bark of elms, poplars, old birches and hawthorns. The dark brown cocoon is usually close to the top of the stump.

Orchard apple and pear trees, if they are old and cankered, will probably harbour *A. myopaeformis*. The larva lives under the living bark. Light brown frass, which it shovels out of its burrow, is the sign manual. Occasionally *myopaeformis* inhabits old hawthorns. All the Clearwings remain throughout the winter in the larval stage, and as they are difficult to rear in captivity it is better to mark affected trees and cut out the pupae in early spring.

Notes and Observations

MACROGLOSSUM STELLATARUM L. IN 1952.—I have seen this species only three times in Bournemouth this year: 7th June, one in my garden; 24th August, one at Petunia on the East Cliff; 4th October, one at Physostegia in my garden. I also saw one at Sandwich, Kent, on 7th July.—H. SYMES, 52 Lowther Road, Bournemouth. 27.x.52.

— In response to your request for records of *Macroglossum stellatarum* L. I would like to report one seen feeding at Verbena at Carshalton, Surrey, on 4th October, about 4 p.m. on a bright sunny afternoon.—F. M. STRUTHERS, 143a Gander Green Lane, Cheam, Surrey. —13.x.52.

SECOND BROOD OF GASTROPACHA QUERCIFOLIA L.—A female caught in my light-trap in early August laid a batch of eggs which hatched in about 14 days. The larvae were fed on plum, and whilst the majority have now settled down to hibernation, 4 went on feeding, attained full growth, and pupated on 29th September. To-day the first imago has emerged. It is very much smaller than normal and is I presume the var. *hoegei* Heuacker referred to by South in *Moths of the British Isles*.—F. W. BYERS, 59 Gurney Court Road, St. Albans, Herts. 14.x.52.

SECOND BROOD OF APATURA IRIS LINN.—Five eggs of *Apatura iris* were collected by me at the end of July last and four of these duly hatched. The larvae fed up in the usual manner, but early in September I noticed that one had tended to outstrip its fellows as regards size. I therefore kept this precocious larva in a separate cage, but under the same conditions as the others, and on 12th October it pupated. No artificial means were adopted to 'force' the insect with high temperatures, and on 29th October a perfect female imago emerged from this pupa. Is there any previous record of this species being double brooded in captivity?—F. W. BYERS, 59 Gurney Court Road, St. Albans, Herts. 29.x.52.

PROCUS VERSICOLOR BORKHAUSEN IN IRELAND.—I have found in the Donovan collection a male *Procus versicolor* Borkh. labelled "Ummera, Co. Cork, 21.vi.1931, Donovan." Ummera House, where Miss Donovan and her sister Mrs. Lucas lived is near Timoleague. The specimen has bright pale red median and basal areas with medium brown on each side of the median band, and a broad whitish marginal area. It is

perhaps referable to *ab. fasciata* Tutt. The genitalia have been examined. This is the first example to be recorded from Ireland.—E. A. COCKAYNE, 8 High Street, Tring.

HYDRAECIA PETASITIS DOUBLEDAY IN HERTFORDSHIRE.—On 15.ix.1952 I took a worn male *Hydraecia petasitis* in the m.v. light trap in my garden. This is a new record for the county. The nearest butterbur grows along the canal three or more miles away.—A. L. GOODSON, 26 Park Road, Tring, Herts.

HADENA CAESIA SCHIFF. ON THE ISLE OF CANNA.—In *The Entomologist*, 1952, **85**, 239, J. L. Campbell records the capture of five specimens of *H. caesia* in his m.v. light trap in the Isle of Canna, Hebrides.

THE OCCURRENCE OF HADENA CAESIA SCHIFF. ON THE ISLE OF RHUM.—This very rare moth is to be taken on the rather low cliffs which lie along the south-west shores of the island between Harris and the Abhainn Fiachanais. In this station it is attached to the clumps of sea campion (*Silene maritima*) growing on cliff ledges and in crevices. As this plant is limited to the west of Rhum, labour spent in seeking the insect in other stations than the coastal zones lying between Kilmory and Harris would be wasted. In accessible places, larvae are easily obtained by lifting the mat formed by the stems and roots of the food plant in day time, when they are readily seen amongst the debris covering the rock surface.—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne. 28.x.52.

THE RANGE OF APATELE EUPHORBIAE SSP. MYRICAE IN THE INNER HEBRIDES.—We first discovered this interesting insect in the Isle of South Rona where the larvae were really plentiful on various trees and shrubs. Subsequently, the species proved to be equally common in the extreme north of Raasay on the Lewisian gneiss, and upon the adjacent Isle of Fladday. During the war, the larvae were not rare on sweet gale along the north-east shores of Loch Cliad, Isle of Coll, whilst, finally, it turned up on the Isle of Rhum. On the latter island, it occurs at two widely separated points, Glen Duian in the south west, where larvae were collected from meadow sweet, bramble, iris, etc., and on the moorlands north of Loch Scresort in the east, where larvae were obtained from many moorland plants, and imagines captured at rest on the bare rock faces so characteristic of the Torridonian Sandstone areas.—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne. 28.x.52.

THE RANGE OF OPEROPHTERA BRUMATA IN THE HEBRIDES.—In view of the great importance of *O. brumata* and its wingless female in zoogeographical researches, it is considered advisable to state now in what stations we regard it as a genuine native, and at what points we look upon it as an introduction. As far as the Hebrides are concerned, we first encountered it on the Isle of Raasay where it is far from common but feeds upon many forest trees. In this island, of mainland proclivities, it is undoubtedly native. In Rhum, Eigg, Canna and Muck, on the other hand, where its larvae feed, for the most part, on introduced plants, it must be an introduction, except in relict hazel thickets. On the Isle of Mull, in the only habitat known to us, we discovered its food-plant to be lime with which alien tree the insect had reached the island,

whilst on Coll it was attached to blackthorn on the moorlands and is thus native.

In the Outer Isles, we detected it feeding on many trees and shrubs in the Lews Castle Woods, Stornoway, and on black poplar at Barvas, both localities being on the Isle of Lewis. Here again we can only regard it as an introduction. Passing southward to the Isle of Harris, we have found the larvae spinning the shoots of *Calluna vulgaris* together in Glen Geirsdale. The same habit is displayed in the Allt Volagir ravine on South Uist where it finds an additional foodplant in the hazel. Further south, on the same island, and nearer Lochboisdale, it favours *Salix aurita*. In all its Harris and S. Uist localities it is certainly native.—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne. 28.x.52.

THE FOODPLANTS OF ABRAXAS GROSSULARIATA L. IN THE HEBRIDES.—Throughout the Hebrides, the foodplant preferred by this insect is *Calluna vulgaris*, and upon this plant it occurs in enormous numbers on the Isles of Lewis, Harris, South Uist, Raasay and Rhum. Elsewhere, it may be found on almost every island, but in smaller numbers, attached to the same plant. Even when gooseberry, red currant and black currant are readily available, as they are on Raasay and Rhum, the species does not desert its normal foodplant. Occasionally, however, it will turn its attention to *Erica cinerea* for oviposition purposes, and I have more rarely noted it upon *Sedum roseum* (Isle of Vatersay), *Corylus Avellana* (Isle of S. Uist), *Salix aurita* (Isle of Harris) and *S. atrocinerea* (Isle of Rhum).—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne. 28.x.52.

LATE DATE FOR DEUTERONOMOS EROSARIA SCHIFF.—I took a male *Deuteronomos erosaria*, in fair condition, at light here on the night of 1st-2nd November.—F. H. LYON, Sampford Peverell, Tiverton, Devon. 2.xi.52.

FLIGHT TIME OF STERRHA SERIATA SCHRANK (VIRGULARIA HÜBN.).—At West Wickham during the first fortnight of September 1952 I frequently noticed this species flying about 7 p.m. (an hour or so before dusk), and on one occasion observed a male alight upon and imbibe from the flowers of *Solidago canadensis*, a cultivated form of golden-rod often seen in gardens about here. I was not previously aware that this species flew naturally during daylight nor that it had a regular flight at this time. The specimens were probably second brood examples, but I do not yet know if there is an equivalent flight with the July brood and I shall therefore look out for one next year, all being well.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 10.x.52.

ASTHENA ALBULATA HUFN. (CANDIDATA SCHIFF.): PROBABLE SECOND BROOD IN 1952.—I took a single ♂ of this species in the Orelestone Woods on 16th August 1952.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 10.x.52.

A NOTE ON THECLA BETULAE L.—I believe it is commonly acknowledged, and is also a fact, that *Thecla betulae* L. is seldom seen, much less taken, on the wing. This record may therefore be of interest. This year I put a friend on to the well known locality here in Brockenhurst as I was laid up at the time and could not go myself. He had only three days to spare at this locality and luckily the weather was fine from the

9th to the 11th of August. On the first day he took a single female on bramble and saw another out of reach of the net. On the 10th August he took two ♀♀ and one ♂, and on the 11th two ♀♀—six specimens in all in perfect condition, evidently just emerged. He found the insect easy of capture and most of them were taken at rest on bramble and the remainder on plants other than the foodplant. The locality comprises several hundred acres of blackthorn, very densely grown and impenetrable over a very large area, and it is owing to this that the insect has not been exterminated. Every year many collectors visit the spot to beat for the larvae and I have taken a good few in past years. No beating can be done in the densely grown parts; thus the insect has a sanctuary in which to breed and from which it distributes itself to the get-at-able edges of the impenetrable areas and outlying isolated bushes.—CHAS. B. ANTRAM, Heathside, Latchmore, Brockenhurst, Hants. 17.x.52.

NOTES FROM WEST KENT.—The past season by all accounts has been a poor one. In my garden Vanessids have been few in number; on Buddleias I usually see six or seven *V. io*, *urticae* or *atalanta* when the sun is shining, but this autumn I have rarely seen as many as three. *Pieris rapae* has been fairly plentiful, but *P. brassicae* and *napi* have been scarce; I have not found a single larva or pupa of *brassicae* or bunch of *Apanteles* on any cabbage or nasturtium leaf or on the adjacent walls. A small immigration of Pierids, almost all *P. rapae*, occurred in a field of lucerne near my house on 29th August. Normally I pass this field almost every day. On that date, passing as usual, I noticed a great increase of Pierids, mostly *P. rapae*. The owner of the field had noticed this influx also. There were two or possibly three *Colias croceus* with them. After two or three days numbers were normal again. I hear that a similar happening occurred further north.

I sugared regularly in my garden during August and September but could not go further afield. *A. secalis* and *P. meticulosa* were common and *A. xanthographa* especially so. Many specimens were undersized and there was a good deal of variation. *L. pallens* was common both at sugar and indoor light in my north room. An interesting new capture for my district was a single *Nola albula* Schf. which flew in on 17th July.

An imago of *A. atropos* was brought to me from Hawkhurst on 16th September. It had flown in to a lighted room. I was able to examine ivy blossom at Broadstairs in mid-October. Insects were scarce; *P. meticulosa* was the most common, and one *E. lichenea* was also taken.—G. V. BULL, White Gables, Sandhurst, Kent. 2.xi.52.

A NOTE ON *DEILEPHILA ELPENOR* L.—In 1951 I recorded (*Ent. Rec.*, 63: 301) that I had found 242 larvae of *Deilephila elpenor* L. I attempted to rear them all and succeeded in obtaining 181 pupae which looked healthy. The other 61 larvae either died of virus disease or produced deformed pupae. On 23rd May 1952 the first imagines emerged and by 2nd July I had had 112 perfect specimens in the rearing-cage; 28 pupae had dried up and 41 had produced the ichneumon fly *Amblyjoppa laminatoria* Fab.

I released 50 imagines, but this has had little apparent effect on the abundance of the insect in the district; although I have searched the same area of waste land with the same diligence as last year I have

been able to find only 72 *D. elpenor* larvae. The first full-grown one in the wild state was found on 30th July and the last one on 12th September. This is rather earlier than last year. Of the 72 larvae only 4 were green in the last instar.

The ichneumon flies (*A. laminatoria*) surprised me by emerging a fortnight before the host species although all the pupae were kept in the same box under the same conditions. Moreover all the males had emerged a week before the first female *laminatoria* had put in an appearance. It would appear from this that *A. laminatoria* is long-lived in the imaginal stage.

Although I examined all my *elpenor* imagines very carefully there appeared to be very little variation in the colouration. Apart from the appearance of larger quantities of green scales on the hindwings in a few specimens there was no measurable difference in the whole batch. The species does not seem to be given very much to variation though Barrett records a specimen having the middle portion of the forewings devoid of scales and diaphanous, the margins, more especially the hind margin, being clouded with smoky black.

One evening when a few *elpenor* imagines were released I was mortified to see four or five sparrows swoop down from the roof. Luckily only seven insects were airborne when I realised my mistake. Only two escaped; the sparrows knocked the others down and carried them off triumphantly in a few seconds. I consoled myself with the thought that, anyway, they were feeding growing families. I did not, however, give them any more free meals, but released the remaining imagines after dark. I did release a few redundant *A. laminatoria* imagines in the same place at the same time of evening, and the same sparrows attacked. They did not grapple, but after flying alongside for a while they left the parasites severely alone. One fly was knocked down, but the sparrow looked at it carefully and would not touch it.—J. H. JOHNSON, 53 Knighton Street, Hephthorne Lane, Chesterfield. 29.x.52.

[I once had a similar experience with a female *Smerinthus ocellata* L., whose wing-span must have been nearly that of a young sparrow. The sparrow had no difficulty in taking it while they were both on the wing, within a few feet of me, and carried it to a roof-ridge where it proceeded to eat it.—P.B.M.A.]

DYSSTROMA TRUNCATA HUFN. IN THE KERRY MOUNTAINS.—My limited experience with the species of *Dysstroma* which Donovan found in the mountains of Co. Kerry and regarded as a sub-species of *D. concinnata* Steph. tends to confirm the view of Dr. E. A. Cockayne that it is, in fact, a single-brooded race of *D. truncata* (*Ent. Rec.*, 64, 291-2).

On the 19th July 1947 at "Windy Gap" between Killarney and Kenmare, at about 800 ft., I caught a few of these moths. Among them was a worn female which I kept for eggs. Only ten eggs were laid before the insect died. The larvae hatched between the 1st and 3rd August and were later sleeved on sawfly in a Dublin garden, where hibernation took place. Six of the larvae survived the winter and were fed on sawfly in a cool shed in the garden. Ultimately four imagines emerged between the 18th and 20th May 1948. These moths are larger than the wild "Windy Gap" specimens (wing expanse about 35 mm. as compared with 31 mm.) and appear to be indistinguishable from normal spring brood *D. truncata*.

I do not question that Donovan was right in saying that the race of moths in the Kerry mountains is single brooded and appears normally in July only. I visited the "Windy Gap" locality during the first week in June 1948 and saw no sign of them. I went there again on the 28th August 1951 and found none; though at a slightly lower level, down by the road, there were some nice forms of *D. citrata* L. It seems, however, that if the larvae are made to pass the winter in a milder climate near sea level and are fed on more succulent food than they find in their bleak mountain habitat, they behave like normal *truncata*.

I was unable to obtain a pairing among the four moths which emerged in May, so cannot be certain that they would have produced a second brood in August. It seems likely, however, that they could have done so.—E. S. A. BAYNES, 2 Arkendale Road, Glenageary, Co. Dublin.

ASSEMBLING WITH SATURNIA PAVONIA L. IN DERBYSHIRE.—Early in the morning of 17th May 1952 a fine large ♀ *Saturnia pavonia* L. emerged in my breeding-cage. It was a sunny day so I decided to watch once more the assembling of the Emperors. Accordingly I carried my moth to the heather moors 1,000 feet above sea-level looking out over Darley Dale and Chatsworth Park. At 3.10 p.m. I happened to be standing on the road talking to the Duke of Devonshire's gamekeeper, who was anxious about his grouse chicks. The Empress was in my valise, inside a cardboard box with a gauze lid. Two minutes later, at 3.12 p.m., two male *pavonia* came upwind and dived into my valise. George, the gamekeeper, was astonished. I placed the box containing the female on the road, and we caught and timed the males as they appeared. They were so excited they could be picked up by hand. At first they came singly, but after 4.0 p.m. they arrived in twos and threes.

In order to judge for myself if the female exercised any kind of discrimination between suitors I placed her on the ground without any covering at all at 4.20 p.m. Three males appeared immediately, and the first one who proposed was accepted. A little fluttering of the wings, and at 4.21 they were *in cop*. I saw no evidence of selection; perhaps the female had grown impatient. I left them where they were until 5.0 p.m., when I went home. Until I went away males continued to arrive on the scene, and when they discovered they were too late they carried on against the wind, still searching. Altogether I counted 52 males attracted to this female in the space of 110 minutes. It was a fine warm day with a gentle south-westerly wind blowing.

As I walked down the road I saw a female *S. pavonia* resting on the heather a few inches above its cocoon. Her wings were still limp and moist. I boxed her carefully and carried her home. By 10.0 p.m. I was surprised to see that she had laid 200 eggs. These were all fertile and hatched on 29th May. I attempted to rear them on birch. They flourished until they were about one inch long, when they all ceased to feed, and died. I have usually fed *S. pavonia* larvae on heather and have found them exceedingly easy to rear.—J. H. JOHNSON, 53 Knighton Street, Hepthorne Lane, Chesterfield. 29.x.52.

EXPERIMENTS ON THE COLOURATION OF INSECTS.—For several years Dr. Saadet Ergene has been conducting a series of experiments on the colouration on insects in the Hydrobiological Station at Baltaliman on

the Bosphorus and publishing the results from time to time, in which she records some interesting conclusions.

In one series she introduced ten yellow and ten green larvae of the common South European grasshopper *Acrida turrita* into a green cage and an hour or two later inserted a chameleon, and then the experiment was repeated with a yellow cage. The experiments were kept up for periods of $1\frac{1}{2}$ to two hours. In the first case, with a male chameleon, in the green cage 70% of the yellow larvae were eaten and only 30% of the green; the results with a female chameleon were similar, 76.4% and 23.6%. In the other experiment, in a yellow cage, the results were reversed, the male lizard taking 81% green and 18.7%, the female taking 83.6% and 16.4%.

2000 grasshoppers were used in the experiments, half green, half yellow. The conclusion is that of the 704 recorded as eaten by the lizards, the proportion of heterochromous taken was very substantially greater than of the homochromous and consequently the latter are better protected than the former. (*Deutsche Zool. Zeitschr.*, 1951, p. 187).

Another series of experiments was conducted to observe whether the grasshoppers select a homochromous environment. An earlier experiment with the same grasshopper had shewn that they do so, and this time she conducted her experiments with the coloured winged grasshoppers, *Oedipoda caerulescens*, *Oed. miniata* and *Acrotylus longipes*, all of which are very variable in colour and resemble their surroundings.

For these experiments she used big cages, measuring 2. m. in length by 1.50 breadth and 1.25 in height: half the floor was covered with red earth, the other with gravel, a sand or earth of different tints in different cages. The experiments were elaborate, with various forms of the grasshoppers, on different backgrounds, and at various times. The results are tabulated in detail in her paper "*Wählen Heuschrecken ein homochromes Milieu?*" in *Deutsche Zool. Zeitschr.* 1951, p. 123, and they show that in the vast majority of instances the grasshoppers selected a homochromous background. It is important to have organised experiments confirm what so many of us have observed in the field, but casually.

A third paper by the same experimenter deals with the question whether grasshoppers can and do change their colour according to their background. This is not so simple a matter, either to observe or describe, as several tints are concerned; but it was shown that green larvae, if kept a sufficiently long time in an environment of another colour, red, orange, yellow, violet, black or white, do undergo a corresponding change of colour and it appears certain that it is only the colour of the background that influences this change. Naturally, the changes are not absolute, nor can the insects put on any new colour at will, as it were, but only within the limits of the chemical composition of their pigmentation. (*Farbanpassung entsprechend der jeweiligen Substratfärbung bei Acrida turrita*: *Zeitschr. f. vergl., Physiologie*, Bd. 34, S. 69-74, 1952).—MALCOLM BURR, D.Sc., Insiah sokagi 34, Bebek, Istanbul.

A STRANGE NOMENCLATORIAL MISCONCEPTION.—In the *Proc. South Lond. Ent. and Nat. Hist. Soc.*, 1951-1952, p. 21, there is a record of a *Maniola jurtina* Linn. ♀ taken in Dorset in July 1951. It is said to

have the left side ssp. *splendida-alba* Leeds and the right side ssp. *jurtina*. There is no ssp. *splendida-alba* Leeds, but there is a ssp. *splendida* Buchanan White, confined to Gareloch and Longa Island off the W. Ross-shire coast, and there is an ab. *alba* Blackie. There is no ab. *alba* Leeds. Leeds in his paper refers to ab. *alba* Frohawk, a pathological form quite unlike ab. *alba* Blackie, and the name is preoccupied. I know that two subspecies may meet and sometimes interbreed, but I cannot imagine two subspecies meeting in the same insect. Dorset and W. Ross-shire are a long way apart. What an enormous insect with its right side in Dorset and its left side in the Highlands of Scotland! This monster should have been described in the paper by Col. Noel Hudson, entitled "Fabulous Fauna". It is quite out of place in the sober account of the Annual Exhibition.—Ed.

ORESSIGENA (NOMEN NUDUM).—With reference to Dr. Cockayne's note on this name, as applied to *Dysstroma concinnata* Stephens, there is in fact a published reference, which appeared under somewhat unusual circumstances. I knew Col. Donovan and his collection extremely well and I am able to supply the reference.

There is a paper in *The Scottish Naturalist*, July-August 1931, together with a colour plate of (among others) *D. concinnata*, from S. Uist. The paper is by Dr. O. H. Wild—a friend of Col. Donovan—and it covers pp. 113-119. Dr. Wild—who had close contact with Col. Donovan in entomological matters as he lived nearby—deals with his own captures of *concinnata* in S. Uist but also refers to Donovan's Irish specimens. Here is a full extract of his note on the subject which could be said to include "a description":

"**CIDARIA (DYSSTROMA) CONCINNATA.** Fig. 3.

An interesting form of the Geometrid moth *Cidaria (Dysstroma) concinnata* was found in some numbers sitting on vertical faces of rocks among heather in South Uist at Loch Druidibeg on 15th July. Prout considers *C. concinnata* to be a good species as proved by the male genitalia, and not just a form of *Cidaria truncata*. He gives as the distribution "chiefly in the Isle of Arran, though one or two examples have been recorded from the Western Mainland of Scotland." Colonel C. Donovan, to whom I have submitted the South Uist specimens, tells me they are similar to examples he has taken in hilly districts of S.W. Cork and Kerry in Ireland. These lack the russet colouring of the Arran species. He considers these examples from Ireland and South Uist to be worthy of subspecific rank, and intends to call this subspecies *Cidaria concinnata oressigena* (Mountain bred)."

There is, in fact, no published note of Donovan's regarding *oressigena* and I would presume that Wild's note will have no standing in respect of validity of name, but nevertheless that is the earliest published reference to it.

I recall Donovan's series very well and I would have said that they were indeed distinguishable from British *truncata*. They are not like *concinnata* from Arran, but they have a very "woolly" appearance when set alongside *truncata* and the markings on the hindwings are more distinct.—P. SIVITER SMITH, 21 Melville Hall, Holly Road, Edgbaston, Birmingham, 16.

[This makes it ssp. *oressigena* Wild.—Ed.]

WASPS ATTACKING PIERIS BRASSICAE L.—I have read with interest Dr. Neville L. Birkett's article on 'Moths and Wasps' in the September issue and feel that my own observations, noted in August and September of this year, are worth putting on record.

Whilst working in a greenhouse on 28th August I was surprised to see what I thought was a *Pieris brassicae* flying in a rather peculiar manner. On looking close I realised that it was a wasp carrying a hindwing between its legs. It was flying to and fro near the roof of the greenhouse and before I could catch it, it made its escape and flew off. It would be interesting to know for what purpose the wing was wanted by the wasp. It is possible that the wasp was also carrying the butterfly's thorax as I was not close enough to be able to say definitely that only the wing was carried. I am certain, however, that the abdomen was not present as such a lengthy burden would certainly have shown under the wasp's abdomen.

The second observation I made was on 23rd September when I saw a wasp descend on to a squashed *P. brassicae* larva (about half-grown), gather it between its legs, and fly off.

On 24th September I was able to watch this procedure more closely, and in this case the victims were active larvae crawling on the ground. A wasp was first noticed busy on the ground. Closer scrutiny revealed that the wasp was on top of a larva and was busy gathering it up between its legs. It then flew off. About ten minutes later another wasp (or was it the same one?) was seen hovering just above the ground. It flew up to within about half to one inch of several larvae until it finally saw one that seemed to suit it. This was about half-grown. The wasp descended on the rear of the larva and attacked it vigorously with its jaws, chewing the unfortunate living larva up into a pulp. No attempt was made to use the sting and although the larva struggled at first it seemed helpless in the grip of the wasp's forelegs and jaws. As the larva was chewed the resulting pulp was packed between the wasp's feet. When the whole larva had been dealt with in this way the wasp flew away. About half an hour later a similar procedure was seen to be followed by another wasp.—B. O. C. GARDINER, 34a Storey's Way, Cambridge. 15.x.52.

AUTRES PAYS, AUTRES MOEURS.—When I was at school a French lad arrived in the town. He was a very keen lepidopterist and he had an introduction to me. His methods appeared to me very unusual and to this day I have never met anyone else who employed them. He used to go out at the very crack of dawn armed with a pair of forceps and pill boxes and find (and box) butterflies as they slept. How he found them and where he found them I do not know as the School rules were somewhat strict and would not allow such ramblings at such an hour. But he was very successful. When he set them he used boards of which he did not have many. He dried his set butterflies in the oven so that they were set in a matter of hours. Is this method satisfactory, and is it normal on the continent?—REV. P. C. HAWKER, Gauthby Rectory, Wragby, Lincolnshire. 17.x.52.

THE (ENTOMOLOGICAL) CARE OF CHURCHES.—At a time when an appeal is being brought before the public for the care of ancient churches it might not be out of place to mention what appears to be the special

problem of the Wold churches here in Lincolnshire. These churches are for the most part built of sandstone, and in summer colonies of *Osmia rufa* L. or *Colletes daviesiana* Smith may be seen flying by the church wall and in and out of holes in that wall. Locally it was believed that these Hymenoptera actually bored into the sandstone and so caused the deterioration of the stone. As the amount of damage to the Wold churches is very considerable every avenue of this subject has to be explored.

Dr. Yarrow of the Natural History Museum has kindly identified several other insects found flying with *Osmia rufa* at Horncastle church. These include *Trypoxylon figulus* L. and the common parasite of *Osmia*, *Chrysis ignita* L. On the assumption that the bees destroyed the stone many suggestions have locally been made, such as spraying the walls with DDT, breeding the parasite, and even the total extermination of the 'ladybird' which appears to be the favourite food of *Osmia rufa*! These suggestions can, of course, never be carried out on the scale needed.

On closer examination of the turret stair on the S.W. corner of Horncastle parish church where activity is greatest, it was found that this turret stair was a later addition to the church and built of very soft sandstone; so soft had it indeed become that a soft tap with a hammer brought away a handful of powdered sandstone. This shows that *Osmia rufa* only bores into stone that is so soft that it can hardly be called stone. This is borne out at my own church at Minting St. Andrew where there are no bees active now; but they have obviously been there in the past and worked out all the soft sandstone leaving cavities down to the hard stone behind. Doubtless when the weather softens this hard stone they will again begin their attack.

It therefore appears that the only remedy is to renew the soft sandstone with newer and harder stone of the same colour. If any entomologists have any observations to make on this I should be most grateful to hear them.—Rev. P. C. HAWKER, Gauthy Rectory, Wragby, Lincolnshire. 17.x.52.

COLLETES DAVIESIANA SMITH IN THE HEBRIDES.—With the capture of this bee in June this year on the sand dunes at the mouth of the Coll River in the Isle of Lewis, the insect has now been noted on every island of any size in the Outer Hebrides from the Isle of Pabbay (Barra Isles) northward to the Isle of Lewis. In the Inner Isles, we have observed it on the Isles of Coll, Tiree, Colonsay and Rhum. On the latter island it occurred in 1951 in enormous numbers on the dunes at Kilmory.—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne. 28.x.52.

BOMBUS SMITHIANUS WHITE VISITS THE HEBRIDEAN SEA ROCKET, CAKILE EDENTULA (BIGEL.) HOOKER, IN THE ISLE OF ENSAY.—This predominantly American plant, detected by me a few years ago in the Outer Hebrides, does not seem to attract many insects although I have sometimes noted beetles of the genus *Meligethes* at its flowers. However, when I was exploring the Isle of Ensay, lying in the Sound of Harris. I discovered that its flowers were patronised freely by queens and workers of the Hebridean Bee, *Bombus smithianus*. Knuth (*Handbook of Flower Pollination*, Vol. II, p. 124) mentions that *Bombus lapidarius* probes flowers of the Common Sea Rocket, *Cakile maritima* Scop., for

nectar. On Ensay, *B. smithianus* usually prefers the blossoms of *Anthyllis Vulneraria*, *Lotus corniculatus*, *Trifolium repens*, *Thymus Serpyllum* and *Rhinanthus stenophyllus* when in search of food on the dunes, but elsewhere it selects *Pedicularis sylvatica*, *Erica cinerea*, *Calluna vulgaris*, *Hypochaeris radicata* and *Bartsia odontites*.—J. W. HESLOP HARRISON, King's College, Newcastle-upon-Tyne. 28.x.52.

BLOCKS VERSUS BOARDS.—My "Thoughts on Setting Lepidoptera" in the July-August number of this magazine (pp. 208-211) has not brought as many rejoinders as I hoped, but several correspondents have referred to it with interest in their letters, and next month we hope to print a short illustrated article by Colonel S. H. KERSHAW, who has invented a travelling-case which holds blocks just as securely as boards, so that one of the objections to the block method disappears.

Several correspondents, no less than Mr. W. E. MINNION in his able criticism printed in the September number (pp. 247-8), take exception to my statement that all setting is "an appalling waste of time," and there is no gainsaying Mr MINNION's assertion that setting is "a deterrent to the mass slaughter of insects"—though I am not so confident that it is "excellent grounding for careful work in all phases of entomological research." Surely in the prosecution of a science all time spent in the mechanical preparation of specimens for study is time wasted. If medical students had to prepare bodies for dissection (a tedious lengthy process), or busy professional pathologists the preparation of microscope slides and the cutting of sections, or physicists the assembling of intricate apparatus in the laboratory, they would be wasting their time as surely as time can be wasted. That this is generally accepted is indicated by the fact that workmen or assistants are specially employed for these purposes. Would one expect a museum zoologist to stuff and mount the large mammals which he places in his gallery for study? Carry the argument to its logical end and one may ask whether a professional footballer would become a better player if he had to make the footballs he uses, or a professional cricketer more skilled if he were obliged to manufacture cricket balls.

That more specimens can be set in an hour by the block method than by the board system must, of course, depend on the skill of the setter. An adept at board setting would, doubtless, have no difficulty in defeating a beginner who used blocks. But the block adept could whack the board adept hollow—as Mr. R. F. BRETHERTON, who has experience of both methods, remarks (p. 260): "blocks have much advantage of speed and handiness." So far from there being an "enormous loss of time . . . from having to unwind each insect separately, remove it from the block and then wind up the wool again for storage" as Mr. MINNION suggests, I, old as I am, can unwind a block in less than one second. The left side of the block is taken between first finger and thumb of the left hand, the tip of the finger holding the wool on the left side of the block. With the right hand one gives a pull sideways, and the windings are off the right side. The right finger and thumb then grip the block, and the wool is given a single pull to the left by the left hand. The wool is off in a trice. These movements become automatic, and with practice the procedure is almost instantaneous. Pectinated antennae are not endangered because the pectinations of moths are always either downwards, or downwards and forwards, or in the same plane as the wings when set.

Another objection to blocks, namely that they are less steady than boards when setting, will be seen to disappear in actual practice—in fact, blocks are not only as stable as boards but a good deal handier when setting, as they can be moved about to any convenient angle under one's hands, whereas in moving a board about one may well endanger the pin-tray or some piece of apparatus.

Mr. BRETHERTON's difficulty that blocks are "less conducive to uniform setting" can be overcome by having before one a block containing a specimen of the same species already set on the same size block.

Perhaps Colonel W. BOWATER's suggestion of 'compromise'—which is borne out by Mr. BRETHERTON's experience—is best; but I feel sure that anyone who has become adept at block-setting will have no wish to add boards to his collection of impedimenta.

What percentages of lepidopterists to-day use blocks and boards I have no means of knowing; but I doubt—and my correspondence reflects the doubt—if not more than one per cent. uses blocks. In the town where I live two of the five lepidopterists use blocks, and in the North Country blocks were mostly used sixty years ago. Perhaps it is only the older men who use them now. But if those who are sugaring addicts would give the block method a fair trial they might well find it advantageous. To compare the two methods by practising them together, or by trying out the block method for a season, might not be profitable; for it is only when skill is attained that the block method comes into its own. And skill cannot be attained in a single season.—O. M. H.

Collecting Notes

A NOTE FROM SOUTH DEVON.—I am afraid the captures I have made during the past summer and autumn bear little relation to the high hopes born of the surprising happenings of last spring. My friends (among whom I distributed over 70 larvae of *Plusia ni* Hb.) and I seem, with our success in rearing this species from the eggs I obtained from my March captures, to have considerably augmented the number of specimens of *P. ni* in British collections. Variation, though not conspicuous, was not confined to the several modifications of the Y mark, and the beautiful abdominal plumes of the freshly emerged males were very striking. I had hopes that someone would make them the subject of an article for the *Record*; I am not well enough up in the literature of the subject to tackle it myself.

A female *Celerio livornica* Esp. taken on 4th May laid eggs and the first count of newly hatched larvae was 65. Only one egg failed to hatch. By some standards my essay at rearing the species (my second experience) was successful—28 perfect moths; but my theories about their proper food, treatment, etc., did not quite work out in practice, and at the end I had the feeling that I was not so clever as I thought.

I've taken no second brood (or third?) of *Plusia ni*, though I heard from Mr. A. Richardson that he got one at Prawle Point in September. He also took *Leucania vitellina* Hb., which has given us a complete miss also. *Heliothis peltigera* Schf. and *C. livornica* too have apparently failed to produce a second brood in my neighbourhood. In fact until the middle of the present month it looked as though an odd *Nycterosea obstipata* Fab. and a few *Laphygma exigua* Hb. were to be my only

autumn migrants. But 19th October saved the situation, for on that night a *Rhodometra sacraria* L., five *N. obstipata* and one *Margarodes unionalis* Hb. came into my light-trap. A week later, 26th October, a second *M. unionalis* was taken; it is six years since this species was last seen here. I am afraid the gales we have experienced lately (making moth-trapping out of the question in an exposed coastal position like mine) will have swept such remnants of the migrant activity as there were completely away. But hope springs eternal in the lepidopterist's breast.—FRANK H. LEES, The Gables, Maidencombe, Torquay. 29.x.52.

COLLECTING IN SEPTEMBER AND OCTOBER 1952.—September of this year was a disappointing month for collecting due no doubt to the unfavourable weather. *Lampra fimbriata* continued to come to light in this garden until late in the month and *Triphaena pronuba* and *Amphipyra pyramidea* were still about in October. Perhaps the only moths of interest which were at all common at light during these months were *Gripesia aprilina*, *Aporophyla nigra* and *Eumichtis lichenea*.

A short visit to a Dorset Heath in the middle of September found *Amathes agathina* common and in good condition as late as September 16th and also *Amathes castanea* (var. *neglecta*) in fair condition.

Ivy in October at Weston produced many common moths on favourable nights, but little of interest was seen. There were, however, several *Lithophane socia* on the blossoms.—C. S. H. BLATHWAYT, 27 South Road, Weston-super-Mare. 3.xi.52.

LEPIDOPTERA AT SPURN, YORKS.—A short holiday in mid-July produced 55 additional species to the list published in *The Naturalist*, No. 839, 1951, bringing the total, for this small area, to 330 species. Cool rough weather made night work unprofitable and most of the 150 species observed were taken during the day by the use of a bee-smoker—a cowardly weapon but not more so than the mercury vapour lamp. The smoke was applied mainly to the overhanging edges of sandhills, which were found to be most productive though good results were achieved from rough herbage in sheltered depressions on the Warren. This mode of collecting is especially good for disturbing the *Gelechids*, which are not so easily taken by beating or at dusk. Better results came from 'smoking' in the late afternoon and evening than in the morning. The following are a few of the species taken by this method:—*Coenobia rufa* Haw.; *Sterrrha fuscovenosa* Goeze (common); *Scopula emutaria* Hb.; *Scoparia pallida* Steph.; *Phalonia affinitana* Doug.; *P. badiana* Hb.; *Metzneria lapella* L.; *Gelechia senectella* Zell. (common); *G. desertella* Doug. (common); *G. affinis* Doug.; *G. basaltinella* Zell.; *Phthorimaea maculea* Haw.; *P. marmorea* Haw.; *P. plantaginella* St.; *Brachmia rufescens* Haw.; *Depressaria liturella* Schiff.; *Elachista scirpi*, *E. triatamea* Haw. and *Phlyctaenia crocealis* Hb.—H. N. MICHAELIS, 10 Didsbury Park, Manchester, 20. 3.xi.52.

ORTHOPTERA

The Genus *Anadolua* Ramme

By MALCOLM BURR, D.Sc., F.R.E.S.

The genus *Anadolua* was formed by Ramme in 1939 for a new species of Decticid from Sandrs Dagh in southern Turkey, on a single male.

Not having seen Ramme's paper, when I took several of the species on the same mountain in 1947, I did of course not recognise it, although I felt certain it was new. I described its occurrence in the *Ent. Rec.*, p. 13, 1948. Later, in 1951, p. 16 of the *Ent. Rec.*, I reported that it was an *Anterastes*, which was what Dr. Tevfik Karabagh took it for at first.

Now, however, on examination of all the Turkish material in the British Museum, Karabagh has decided that my specimens are to be referred to Ramme's species, and also that the female attributed by Ramme to this species in 1951 is distinct.

He has accordingly revised the genus, which now contains four species, all from southern and western Turkey. They are *A. davisii* Kar., *A. burri* Kar., *A. schwarzi* Ramme and *A. rammei* Kar., the latter being the female which Ramme had attributed to *A. schwarzi*.

They are all probably fairly widely distributed in the Mediterranean portion of Turkey. The types of *A. davisii* and *A. burri* are in the British Museum. Karabagh's paper is published in the *Rev. Fac. Sci. Univ. Istanbul*, Series B., vol. xvii, 1952.

DIPTERA

Diptera attracted by a *Cossus*-infested Oak-tree

By E. C. M. D'ASSIS-FONSECA.

In August this year (1952) I was introduced to one of the few known *Cossus*-infested trees in the New Forest (Hants) by Mr. J. E. Collin, with whom, in company with Mr. H. W. Andrews, I was most fortunate in being able to enjoy several days collecting in and around the Forest. The tree in question is an ancient Oak which has obviously been infested by larvae of the Goat Moth (*Cossus cossus* L.) for many years, as was evident by the presence of numerous old borings, now dry, and others at different stages of active exudation. On approaching the tree one was immediately aware of the characteristic sweet odour of fermentation, and, in spite of the (entomologically) poor season and a temperature rather below normal for August, a number of interesting insects were being attracted.

Most prominent among the insect visitors were hornets (*Vespa crabro* L.), two or three of which were almost always to be seen either flying around near the base of the tree, or already well settled into one of the many hollows and grooves down which the fermenting sap was seeping. One was liable accidentally to catch one of these huge aculeates when netting other insects, and it was advisable to inspect the contents of the net before diving a hand in with killing-bottle or tube.

It was particularly hoped that we should see *Phaonia laeta* Fall. and *Phaonia laetabilis* Coll., two closely allied species of extremely similar appearance which are known to be especially associated with *Cossus*-infestation (*vide* Collin, 1951, *Ent. Rec.*, 63: 1), and three or four visits to the tree resulted in good series of both sexes of *laetabilis* and a male and two females of *laeta*; in addition several males of *Phaonia cincta* Zett. and a female of *P. fuscata* Fall. were taken, both these latter species bearing a remarkable resemblance to *laeta* when resting on the

tree-trunk, the transparent yellow base to the abdomen in *cincta* being hidden by the folded wings.

Phortica variegata Mg. was abundant, as also were *Drosophila tristis* Fall. and other species of the *D. obscura* Fall.-group. Although Drosophilidae predominated as far as individuals were concerned, the majority of species visiting the tree belonged to the Muscidae (incl. Anthomyidae). A small number of *Muscina pabulorum* Fall., *M. assimilis* Fall. and *Polietes lardaria* F. were almost permanent residents, while occasional specimens of *Phaonia palpata* Stein, *P. variegata* Mg., *P. pallida*, F., *P. erratica* Fall. and *P. signata* were to be seen from time to time resting or walking about on the affected areas of the trunk. *Fannia* species were also much in evidence, particularly *F. lineata* Stein, of which good long series of both sexes were obtained, while a few specimens of both sexes of *F. difficilis* Stein and *F. canicularis* L., and females of *pretiosa* Schin., *fuscula* Fall., *incisurata* Zett. and *scalaris* F. were taken. Other species recorded were *Ferdinandea cuprea* Scop., *F. ruficornis* F. (a single ♀), *Helomyza affinis* Mg., *Opacifrons coxata* Duda, *Lucillia caesar* L., *Hydrotaea parva* Mde., *Piezura pardalina* Rond., *Hebecnema umbratica* Mg., *Mydaea detrita* Zett., *Hydrophoria ruralis* Mg. and *Hylemyia strenua* R. D.

Fifty Years Ago

(From *The Entomologist's Record* of 1902).

PAIRING OF THE 'VAPOURER' MOTHS.—*O. antiqua*, as everyone knows, has a female with well developed legs and rudimentary wings. She emerges from her cocoon, which she never leaves, and lays her eggs on its outer surface. In *O. gonostigma* the history is the same, with the interesting difference that there is an outer loose cocoon, or network of silk, beneath which the female moth remains, laying her eggs on the inner, true cocoon. This is a step onwards towards the habit of *O. ericae*, which, according to Dr. Breyer, emerges from her chrysalis sufficiently to make a small opening in it, but does not emerge from it, but reverses her position in the chrysalis case, so that pairing takes place through this opening, the male outside, the female inside the cocoon.

On the evening of July 24th, therefore, I took the cocoon [of *O. splendida*] to the hillside and laid it on a stone . . . I had not to wait more than a few minutes before a male moth came up. . . . He soon found the cocoon, and walked very busily all over it, examining it carefully, especially by trailing the extremity of his abdomen over it. Some of the procedure was almost certainly directed to informing the enclosed moth of his presence, and it may be that he ascertains the right spot of the cocoon by the movements of the female within. After some minutes he became quite quiet and motionless, with his head applied to the extremity of the cocoon, and so remained for a space of about ten minutes. What was occurring during this period?

The next step noticed . . . renders it almost certain that the moth inside is occupied during this period in making an opening in the cocoon. The male is certainly not doing so, as he is perfectly quiet, but with an aspect of attention. Suddenly he becomes quite active, thrusts his head into an opening at the end of the cocoon, and in less than half

a minute disappears entirely into the cocoon, his wings being pressed and folded against his sides, so as to occupy little or no space, so that one reckons that their splendour must be absolutely and permanently destroyed. I then took home the cocoon, now containing two moths instead of one. The opening by which the male had entered was very small indeed, but quite evident, though its margins had closed together again. This was at 6.45 p.m.; at 9 a.m. the next morning matters remained in the same condition—the cocoon still containing two moths. On returning home at 3 p.m. I found the male moth had come out of the cocoon and was at rest in the box. The curious part here is that his wings seemed little the worse for the severe treatment they had received.—Dr. T. A. CHAPMAN M.D.

Current Literature

DE DANSKE MAALERE. By Skat Hoffmeyer, D.D. Universitetsforlaget 1, Aarhus. 1952.

This volume on the Danish Geometridae follows the two earlier ones on the Bombyces and Noctuidae and completes the Macrolepidoptera. It will be of great interest to British lepidopterists, because the Fauna of Denmark has much in common with that of the British Isles. Not only are the majority of species the same, but many aberrations are found in both countries, such as the dominant melanic forms, *Gonodontis bidentata* ab. *nigra* Prout., *Biston betularia* ab. *carbonaria* Jordan, *Erannis defoliaria* ? ab. *nigra* Bandermann, *E. leucophaearia* ab. *merularia* Weym., *Boarmia roboraria* ab. *infusata* Stdgr., *Cleora repandata* ab. *nigra* Tutt, *Ectropis crepuscularia* ab. *delamerensis* B. White, *Bupalus piniaria* ab. *funebria* Cockayne, and the recessives *Lygris testata* ab. *obscura* Bretschneider, *Ennomos quercinaria* ab. *perfusata* Prout., *Cepphis advenaria* ab. *fulva* Gillmer., and *Ectropis bistortata* ab. *defessaria* Freyer, some of which are figured in the text and others on the plates. The distribution in northern Europe is given in the case of each species, in addition to its Danish localities, its habits, and larval foodplants. The coloured plates of the perfect insects are excellent, even those of the genera *Scopula*, *Sterrya*, and *Eupithecia* are successful, but those of the larvae are not quite so good and are not all drawn to the same scale. The numerous text figures, most of them from photographs of aberrations, are very clear and add much to the value of the work. Line drawings of the genitalia of many of the closely allied species, and of all the members of the genus *Eupithecia*, will be appreciated by the more serious students. We have no book in this country to compare with this, and Dr. Hoffmeyer is to be congratulated on the last and best of his three volumes.—E. A. C.

PROC. AND TRANS. SOUTH LOND. ENT. NAT. HIST. SOC., 1951-1952, with 7 plates and 18 text figures.

As the Treasurer foretold last year, the present volume is smaller and has fewer plates (none coloured) than the previous one, but in spite of the financial stringency it has maintained the high standard reached in recent years. The plates are excellent. The papers of most general interest are "Optimum conditions for the occurrence and observation of rare insects" by H. S. Robinson, "Fabulous Fauna—Solomon to

Columbus" by Col. Noel Hudson, and "Entomology during the early years of the Royal Society, as revealed by the Philosophical Transactions". The President's address "Collecting Lepidoptera in the South of France in 1950 and 1951" giving an account of collecting in the Alpes Maritimes and the Basses Alpes will help to broaden the outlook of British collectors and gives information about some local species, encountered only in higher mountains, which will be valuable to those who collect on the Continent.—ED.

THE ENTOMOLOGY OF BIRD PELLETS. By Philip M. Miles. Amateur Entomologists Society Leaflet No. 24, 1952. Price 1/6.

This paper provides an introduction to the study of entomological remains to be found in pellets ejected by birds. It now appears that most birds feeding on animal matter produce pellets; some such as owls regularly, others such as the insectivorous passerines often eject pieces of indigestible matter at irregular intervals. A guide to the identification of pellets from some species is provided. There are, however, a few errors requiring correction. For instance, if pellets are formed from indigestible remains (page 3) it is difficult to understand how the pellets of Black-headed Gulls may be recognised by being composed of "insects, worms, etc." (page 7). Worms would invariably be digested and only the tiny chaetae would remain. The author divides birds which eject pellets into habitat groups. This admittedly is difficult since overlap is certain to occur. However, the Sparrowhawk is certainly not typically a bird of farmland, and since the Heron breeds mainly in woods, it deserves a place in that category. It is stated that no simple method of obtaining food from nestlings that does not involve a certain amount of preparation has been devised. This is not quite true, for plastic rings fixed carefully round the necks of birds larger than Starlings yield excellent food samples. The nest should be visited after the young have been fed by the parents, and the food may then be tipped from the beak into a tube of alcohol. It is also possible to squeeze the food from the throats of nestlings of certain species, such as the swift, if this is done immediately after they are fed by the parent. These methods require little preparation, but should be applied with great care.

The photographs of specimen pellets and insects disgorged by gulls are excellent. The bibliography at the end of the paper will be found useful to entomologists wishing to start a study of the insect food of birds. In some of the works quoted detailed references to special aspects of bird food problems will be found.

D. F. OWEN.

HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS: vol. V, part 12 (COLEOPTERA: Cerambycidae). By E. A. J. Duffy, F.R.E.S. 9 × 6 ins., paper covers, 18 pp. (incl. index), 32 text figs. Published by the Royal Entomological Society of London, 1952. Price 3s 6d.

This is the first part to appear of the volumes (IV and V) dealing with the Coleoptera. Diagnostic tables of the subfamilies, genera and species of Longicorns found in Britain follow three pages of notes on structure, economic importance, habits and early stages, with a short bibliography. Our very modest tally of native species—the 'aristocrats'.

among British beetles—is here swelled by the inclusion of those exotic forms most often imported with timber, etc., at least one of which is possibly already established. Brief ecological or occasionally distributional data are added for some species but not others; and the present writer feels that, for our own fauna, a rather fuller treatment of this aspect (with some indication of relative incidence) would for many users have enhanced the interest if not the value of the work. Again, not all of us will agree with the author's attribution of doubtfully indigenous status to *Monochamus sutor* L., the two *Cerambyx* spp., and *Pyrrhidium sanguineum* L. (cf. *Ent. mon. Mag.*, 1946, **82**: 181, 184; 1951, **87**: 157-8). The character 'sides of thorax yellow' for *Phymatodes testaceus* L. (p. 12) leaves out of account the form with wholly black fore-parts; nor does 'elytra uniformly yellow, blue or brown' for this genus (p. 11) allow for those of the same species having the elytra two-coloured. *Grammoptera holomelina* Pool is treated as an extreme form of *G. ruficornis* F.—probably correctly. The familiar name *Criocephalus* here becomes *Arhopalus*; but we note with approval the restoration of *Anaglyptus* for the current monstrosity *Anaclyptus*. The only misprint seems to be *tabacicola* for *tabacicolor* in both text and index. The keys are simple and practical and the figures admirably clear.—A. A. A.

USE OF RADIOACTIVE TRACER IN THE STUDY OF INSECT POPULATIONS (LEPIDOPTERA). By H. B. D. Kettlewell. *Nature*, 1952, 170, 584.

Dr. Kettlewell used plants of *Lamium* and *Rumex*, establishing them in water culture for two or three days, after having stripped them of their leaves. Radioactive sulphur 35, with a half life of 87 days, was added to the water and absorbed by the young leaves. Larvae of *Callimorpha dominula* and *Arctia caja* were fed on these plants and retained some of the sulphur in their tissues, and it was found by means of a Geiger counter that pupae and moths bred from these larvae were radioactive and even eggs laid by the *caja* were radioactive. No loss of viability was detected. Dr. Kettlewell hopes to release a known number of radioactive larvae in their last instar into a normal population and, by recapturing the radioactive moths and capturing the normal ones, to estimate the total population by the method of Fisher and Ford. It will then be possible to determine the death-rate in the early stages. The total larval population =

$$\frac{\text{radioactive larvae released} \times \text{total imagines caught}}{\text{radioactive imagines caught}}$$

and the mortality = total larval population—total population of imagines.

This method, however, will only give an estimate of the death-rate in the very late larval life and in the pupal stage, not in the early stages as he claims, and will give no clue to the cause of the death-rate. Sulphur 35 can only be used for Lepidoptera with a short pupal life, and some other isotope with a longer half life must be found for use in over-wintering pupae. The estimate of the total population can be made with a fair degree of accuracy in the case of moths such as *C. dominula* and *Zygaena*, which live in circumscribed colonies, but it is very doubtful if a high enough percentage of radioactive moths will be captured and recaptured to estimate the population of most species of Lepidoptera.—ED.

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Wanted.—Living females of common species, especially satyrids and fritillaries, from most parts of the country. Will exchange live or dead stock.—*J. F. D. Fraser, 52a Carlisle Mansions, Carlisle Place, London, S.W.4.*

Wanted.—Pupae of Irish or Scottish *O. bidentata*, and ova of wild parents of English *C. elingvaria*. Liberal exchange of English or tropical Lepidoptera.—*W. Bowater, 41. Calthorpe Road, Edgbaston, Birmingham, 15.*

Urgently required during the next few months for research purposes, pupae of *Biston betularia* Linn. (melanic or otherwise). Would be most grateful if entomologists would inform me of approximate percentages of the two melanic aberrations—*carbonaria* and *insularia* and the typical, occurring in any locality.—*Dr. H. B. D. Kettlewell, Department of Zoology, University Museum, Oxford.*

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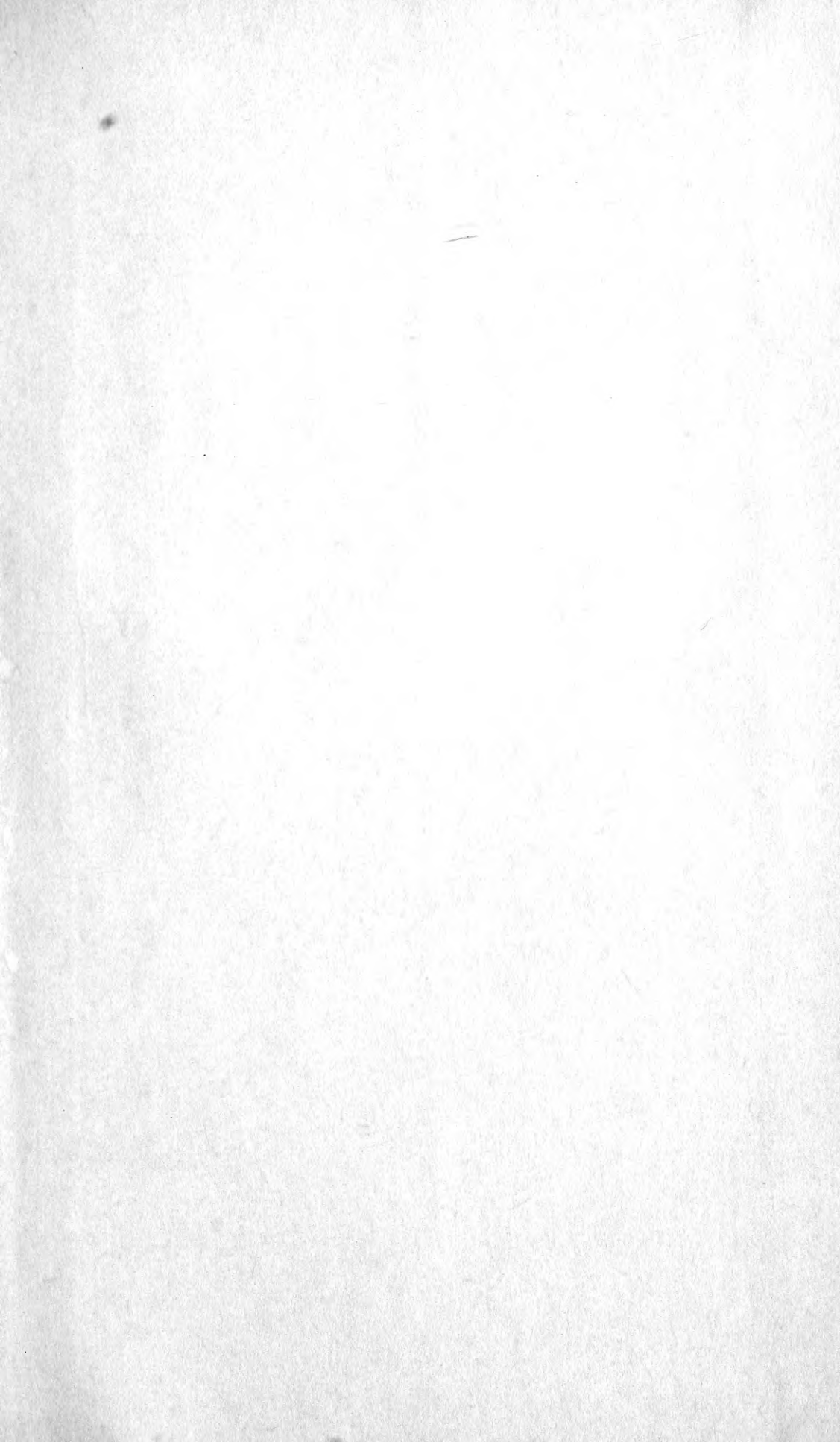
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